A GUIDE TO SOCIAL IMPACT ASSESSMENT

by **Cathy M. Waiten**

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ABSTRACT

Canada's economic, social and political evolution has been characterized by the development of natural resources. Indeed, the impetus and rationale for settlement of the Canadian frontier by the Europeans stemmed from the availability of natural resources. Since the 16th century this trend has continued and within the last decade appears to have accelerated.

Natural resource development typically occurs in the parts of our country where native peoples have made their homes for generations. This movement of industry, government and masses of people into the native environment represents an intrusion into native culture and traditional way of life. Typically, this host population does not act as entrepreneur or initiator of the development but tends to play a passive role or to participate in only a modest way through employment. It is characteristic of resource development that the primary benefits (e.g., warm homes) are actually received far from the source, while the secondary impacts of the development (e.g., disruption of community life) bear directly upon the immediate area from which the resource is taken. The benefits from development tend to be fleeting -- once used, resources cannot be used again -- whereas the secondary impacts may endure for generations.

Hence, because the process of development of resources tends to alter the original resource base in the area, there is a great potential for social and cultural change of the local groups and communities who hold different values, beliefs and forms of social organization from that of the larger society. This notion is especially relevant for bands which consist of stable communities already established on their own land and resource base. To be more exact:

> The culture, the social structures, and the ways of earning livelihoods the original people possessed tend to be displaced, diminished, or perhaps even shattered.... The problem is much more how these people can come to believe themselves secure in their future, which because of their relation to the land means the survival of the species....
>
> (Trost 1975:3)

If we can take as given the accelerating nature of resource development, especially in or near to areas of primarily native habitation, and the fact that natives hold values and have interests which differ from those of the development agent and the sectors of society who will benefit from development, then we can also realize that native peoples will not only receive the brunt of the adverse

effects of development activity, but that these impacts will be different, to some extent, in nature and scope from those felt by non-native groups. The issue for native people, in light of their objective to preserve and enhance their cultural identity, is to attempt to minimize potential adverse impacts which could cause deviation from their chosen course.

The subject of this report is social impact assessment (SIA) and the objective is to demystify SIA — as both a process and as a research technique. In other words, this report provides some basic information on the aspects of SIA to enable the readers to draw their own conclusions as to its applicability and utility as a tool which can be employed for their own purposes and within the context of their own particular and unique situation(s).

This report focuses on the following aspects of SIA:

Section 1 presents a working definition and explains the importance of a social context for SIA.

Section 2 looks at the characteristics of SIA in terms of its uses as a planning, policy and decision-making tool, along with some of the criticisms, problems and constraints. The roles and responsibilities of the actors involved are outlined.

Section 3 is concerned with the legislative (or policy) framework in which SIA operates. In Canada, SIA is viewed as a component of the Environmental Impact Assessment or Statement (EIA/EIS) required by law under the conditions of the Environmental Assessment and Review Process (EARP) and administered by the Federal Environmental Assessment Review Office (FEARO) of the Department of Environment. The provinces have their own requirements.

Section 4 outlines the operational procedure or phases involved in the conduct of SIA.

Section 5 presents some conclusions and recommendations.

Section 6 contains the references utilized in this report. The more helpful sources have been noted by an asterisk.

Section 7 is comprised of five appendices offering the reader additional information pertaining primarily to current practitioners of SIA.

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1. SIA: TOWARD A DEFINITION

1.1 Background

The term "SIA" is now about six years old (Stewart 1979:6). However, as a "concept," SIA can be traced to the social movements of the 1960's which were characterized by a concern for preservation of the environment. In 1969, the United States formalized the requirements for Environmental Impact Assessments (EIA) under the National Environmental Protection Act (NEPA). The purpose of EIA is to introduce broad environmental and social/cultural concerns into the public decision-making process. (Boggs 1978:3) In Canada, the decision to institute a federal environmental assessment policy was made by Cabinet in December 1973. The provinces have, for the most part, adopted similar policy and guidelines for their own jurisdictions. This aspect receives further treatment in section 3.

1.2 A Working Definition

Authors writing on this subject agree that there is no one definition which encompasses and conveys a comprehensive understanding of SIA. This paper adopts the following working definition formulated by Peter Boothroyd:

> Any study which attempts to determine the impacts of a particular physical development on the day to day quality of life of persons whose environment is affected by the development, other than those whom the development is expressly designed to serve; such a study may be prospective or retrospective.
>
> (1975:2)

1.2.1 The social component refers to the requirement that, as a process, SIA be firmly located within the context of the social milieu, especially in terms of approaches, theory and methodology. The social milieu can be divided into: the social setting (which refers to aspects of the environment such as community infrastructure) and the social condition (which is comprised of the perceptions or attitudes of community members) e.g., the "feelings, expectations and satisfactions" which give meaning to the realities of the social setting. (Carley, 1980)

> Any assessment which purports to be 'social' in its character must deal with man in social terms....social relationships, personal life style and the culture in which he lives...
>
> (Fitzsimmons 1975:25)

There are a number of approaches to SIA, none of which are rigorous or alone provide the entire picture of how a development will affect social or cultural activities and needs. There is a general consensus that a sound approach should be expressed in terms of how individual people are affected and that this should entail a community orientation.

Theory is an element of the approach one adopts. Theory or theoretical orientation is important to social research because it presents a strategy which serves to organize and delimit the field of study. It tells you what types of questions to ask and what types of data to collect. Theories propose different ways of interpreting the social world and give different propositions about how social systems respond and adapt to change.

Approach and theory inform the researcher of what to study and methodology refers to the procedure which tells the researcher how to perform the study.

There is no single best way to do SIA. This lack of encompassing SIA approach, theory and methodology is even more significant for native people. Their lifestyles, values and culture tend to be quite different from the rest of the population and differ from one geographic area to the other and even from band to band. This recognition goes back to the requirement that SIA must be performed within the social or cultural context of the people being impacted. Frank Tester explains quite fully that for SIA to be a relevant and meaningful experience for native people it must be performed in a way which recognizes the unique relationship between the historical, environmental, social, cultural and economic factors which comprise the "essence" of native people's way-of-life and the communities in which they live. (Tester 1980 A) His approach is presented in Section 4.

In short, SIA requires a multi-disciplinary approach drawing upon principles from the many social sciences, especially the fields of anthropology, economics, psychology and sociology. It must remain flexible in order to adapt to different situations.

1.2.2 Impact is defined as an alteration — an improvement or deterioration in the general well-being of the population experiencing the effects of development. Impacts are viewed as external agents inducing change in such entities as behaviour, attitudes, values, quality of life, friendship networks and so on. For example, a development may cause pollution in a nearby river; in turn the fish are affected and may die or become inedible. The local population who use the fish as a primary source of food have lost this element in their diet or, if fishing constitutes a part of their local economy, they have lost this means of livelihood and are forced to turn to other means of support. These are "impacts." The impacts may be manifest in a number of ways, such as leaving the area, turning to welfare or unemployment. This may lead to feelings of inadequacy, deprivation, loneliness etc., which in turn may induce violence, alcoholism or a host of other ills. In other words, it is the impact of such effects on the people who derive their well-being from fish that is important.

1.2.3 Assessment refers to a factual and objective investigation which involves interpretation and valuation of the impacts. The task for the social impact assessor is to take the population's perceptions of the present conditions and those of potential impacts and compare these with the impacts that are projected.

Hence, one can readily understand that SIA, to be effective, must be based on and indeed take place within and from the perspective of the community's own unique social and physical environment.

2. SIA: SOME CHARACTERISTICS

In simple terms, SIA is "the assessment of the effects of projects and policies on people and communities." (Mack 1974) As an activity, SIA has generally been done in a casual fashion, primarily by planners and developers. Lately SIA has gained recognition as a legitimate field of professional expertise with a distinct form (see section 4) and distinguishing features and characteristics.

2.1 Features

The following points are the views of a number of authors on "what SIA is":

- Operationally, one can regard SIA as formal compliance to legislative acts or policy. As such it is viewed as an extension of EIA. (Wolf 1974:4)
- SIA symbolizes the assumption of social responsibility by public authorities, thus it becomes an imposition on private interests (ibid.).
- It is the process of identification, analysis and evaluation of social impacts resulting from a particular event. (Dietz 1977:2)
- SIA is geared toward the future and can be viewed as an application in applied futuristics or anticipatory research. As such, it "seeks to place the expectation and attainment of desired outcomes — of legislative enactment, project operation and...development on a rational and reliable basis." (Wolf 1976:3)
- SIA is not knowledge for its own sake, but is applied research in that it seeks to apply knowledge and to facilitate the flow of information.
- SIA is contextual since it must reflect the values, attitudes and perceptions of what development will bring in terms of the sectors of the impacted population. Within a community what may be perceived as an impact by one group of people may not be perceived as such by another.
- SIA, when focusing on the community as the unit of analysis, has obvious implications for community development. Community oriented approaches stress the primacy of citizen participation as a critical input to the process and stipulate that the members contribute information. By ensuring public participation, the community becomes better informed and more aware of the broader issues of development and is thus in a

> better position to articulate their goals and to pursue and defend their interests. SIA then becomes not only a consciousness-raising experience but also a means to enhance future planning and organizational capabilities. (Morris, 1979: 19-20)

Three important functions can be delineated for SIA: planning, policy and decision-making.

2.1.1 Planning Tool

Planning can be divided into three main stages: policy (which defines broad, socially desired goals and outlines the means used to obtain them), programs (which operationalize these means and channel resources towards satisfying ends) and projects (which represent the actual implementation of activities designed to further the goals established in policy and programs). (Michaelson 1976:8) SIA is especially necessary in these areas to facilitate forecasting of social impacts, because planning for change before it occurs rather than reacting to change after it occurs is a major purpose of SIA.

In essence, SIA supports judgement with analysis. The effectiveness of planning is enhanced through SIA via the provision of: a means of coping with uncertainty in the future; a framework for developing, implementing and co-ordinating policies and programs and meeting goals; a delineation of a range of potential effects of various alternatives; a basis for monitoring ongoing processes; and a vehicle for the various actors to co-ordinate socio-economic activities. (SFAA 1979:6, Strong-Hall 1977:IV-3, Shera, 1980)

2.1.2 Policy Tool

Policy selection entails two decisions: to act, and to decide between alternatives (Finsterbusch 1977A:2) in relation to some predefined goal or objective. By providing a balanced objective appraisal of alternative courses of action, SIA can become a tool to enhance the selection of action for a wide range of policy problems. Some practitioners note that SIA may have only a limited role in decisions involving policy choice (Di Santo 1980); therefore, the final test of SIA becomes the extent to which it can influence decisions of this nature.

2.1.3 Decision-Making Tool

On the other hand, some sources explain that as a decision-making tool SIA is a part of the "rational problem solving process" (Carley 1980) serving to facilitate decision-making activities by determining the range of costs and benefits of the alternative proposed courses of action. (Finsterbusch 1977A:2) The decision-making process is one filled with conflict. The various interests in the process hold different values and interact in pursuit of different goals. SIA seeks to focus this conflict and enable a more rational decision as a neutral arbitrator presenting a clarification of issues, roles and objectives. (Morris 1979:19)

2.2 Constraints, Problems and Criticisms

SIA may appear to be a "miracle cure," a dose of which will prevent or cure all the social ills of the impacted population. Some observations to the contrary are of note: Michaelson points out that most attempts to inform policy have failed (1976:6), "muddling-through" appears to remain the norm when it comes to planning, policy and decision-making (Strong-Hall 1977-26). SIA is often "too little too late" and is considered by the public to be an after-thought or merely a token gesture. (Stewart 1979:6, D'Amore 1978A:2) Corporations tend to regard SIA as an unnecessary extension of regulations which they must adhere to, and therefore appear to put little effort or resources into the process. (Strong-Hall 1977: A-27)

However true these and other criticisms may be of SIA, to fully comprehend the nature of the process one must appreciate the various constraints it operates within and the problems which are germane to any social scientific endeavour. Aside from the eternal problems of time, funds and skilled staff, a host of other entities plague SIA, such as:

- Lack of legal mandates which specifically call for its practice. (Tester 1977:16)

- Inadequate and often restricted availability of the data which are required for the baseline profiles hamper the projection of impacts. Data at the community level are often incomplete and a further restriction is the difficulties encountered when questioning the community population. (For example, see Hobart 1979)

- SIA deals with subjects that are hard to define and even more difficult to measure. Most of the social sciences are in a quandry over the issue of the validity of qualitative data — those perceptions, feelings, beliefs and attitudes we hold about our environment and well-being. The findings of the Berger Inquiry serve to illustrate the utility of incorporating the people's own values into the decision-making process. Analysis of attitudes can aid as a back-up or substantiate quantitative findings. For example, population growth can be fairly easily measured by counting, but the impacts of the additional in-migrants are felt in such ways as housing shortages, increased rents and breakdown of friendship ties. The "feelings" that the local population has about the effects of outsiders on their routine way of life can only be articulated through communication. These are uncertain sets of social values that tend to be less readily verbalized. (Dale 1980)

- SIA takes place within a socio-political context which makes it subject to a number of constraints which are likely to inhibit the effective and efficient completion of the process. For example, pressures on government induced by special interest groups. (Shera 1980, Dale 1980)

- SIA has evolved within the context of our times, currently characterized by decisions made on straight economic terms such as potential rise in income, employment and G.N.P. (Stewart 1979:6)

- A main problem of SIA stems from its definition, "We are not sure what it is, what it assesses, or how it fits into the process of arriving at a development decision." (Carley 1980)

- Other criticisms and problems include: insufficient theory or superstructure to guide research designs and the selection of relevant factors (Larson 1979:128); and a lack of consensus on appropriate methodology. (Wolf 1975:52)

- For some authors, the problem is not a lack of cohesive theory and methodology, but the role of government in responding to SIA. For example, Carnol suggests that society's structural arrangements have an influence upon the effectiveness of SIA, in that power is the sole preserve of government and business, and that given this concentration SIA is in danger of raising expectations and making promises which cannot be fulfilled. He continues to explain that it is unlikely that SIA can ensure the type of developments which will benefit the public in an equitable manner without a redistribution and decentralization of power to allow extensive community participation at every level of decision making. (1980)

2.3 Actors: Roles and Responsibilities

The activities involved in the development of natural resources bring together three central actors — proponent, community and government — each with its own particular set of value orientation and interests. These interests tend to conflict. Seen in this light, the task for SIA is to focus on and reduce the inherent conflict by equalizing or neutralizing the concentration of power through the provision of a communication network. The goal for SIA is to provide an objective appraisal of the effects of a project on the social environment.

2.3.1 Proponent

The proponent has three main functions. He is the initiator of the project proposal and of the SIA process. He is a researcher, on whom the onus lies to conduct the SIA. As implementor, he constructs, operates and monitors the project. (Morris 1979:25) The proponent, alias business, industry, or corporation, typically possesses a set of values and goals including such profit, survival and expansion.

Although the issues to be explored in SIA and the manner in which they are to be addressed are laid down in government guidelines, the corporation has its own vested interests. This calls into question the perceived usefulness of SIA, because

> Organizational power to obtain objectives is great...profit motives, the cultivation of organizational power and the perpetuation of existing programs... Consequently the preparation of SIA may be regarded as mounting barriers to organizational success... The power of the organization often casts a lengthy shadow over the assessment process. (Isard 1976:13)

As a consequence, the proponent may address and stress only the benefits development can bring and suppress the risks, or the SIA may not be as complete as it could be or offer an indepth assessment of the situation. However, the community can, to some extent, counteract the possibility of this occurring. On its own, the community can endeavour to become knowledgeable about the project and potential effects or attempt to become involved in the design and operation of the SIA process and undertake to look specifically at the past behaviour of the proponent with a view to its motivation and personality. This last point has received attention from Michalenko, who feels that the characteristics of the proponent can prove to be an indicator of the impacts of a project. Through examination of a corporation's track record, one can gauge the extent of responsibility it takes for its ventures by way of local hiring, provision of training programs, sensitivity to local affairs and community relations.

On the other hand, the SIA process can be a helpful tool to the proponent. By performing the operations of the process, the company is provided with a means of negotiating an uncertain operating environment. For example, the potential supply of labour can be estimated. Also, the SIA can bring to light the extent of mitigative and/or compensatory measures that may be required. Should the costs appear to outweigh the benefits the proponent hopes to derive, the project could be cancelled or a potentially less damaging alternative implemented. SIA can also become a means of enhancing its public image.

2.3.2 Community

Usually the community plays a passive role, responding to surveys, questionnaires and interviews and offering input during the assessment and evaluation stages. However, the literature points to a current tendency towards expansion of this role. Communities appear to be assuming more responsibility for the research and evaluation functions. As a researcher, the community is actively involved with collecting information and can thus bring to light issues that may be overlooked by a conventional research team of outsiders. With respect to evaluation, the community continuously offers feedback on the activities of the research project itself in terms of adequacy and coverage.

The future is a realm of choice. A community under threat of impact from development which the members feel is harmful must take upon itself responsibility for what that community is going to look like and how it is going to change.

2.3.3 Government

As law-maker and arbitrator of conflict, government ensures equity. In a broad sense, governments set guidelines, regulations and policy and ensure that these are adhered to. They monitor the situation for future policy consideration, evaluate and make the final decision on the proposal. Government, explains Connor, reflects the values of justice, equity and stewardship, but it also must respond to political realities. (1980) These realities at times appear to be manifest in a conflict of interest situation with government supporting the project versus a group of "weak and disorganized communities." (Carnol, 1980)

In addition to acting as regulator, evaluator and decision-maker, government could be called upon to assume additional roles (control technician, project leader, interpreter of community concerns), and it can also provide perspective and encourage planners and community residents to conduct SIA. (Grigsby 1976)

2.3.4 Consultant

The consultant, should the proponent decide not to use in-house personnel, is essentially the intermediary between the main actors. Aside from performing the research function, the consultant serves as a resource person and facilitator of the public participation process, and can thus identify areas of opportunity for the community. He acts as an interpreter and mediator, translating for actors a "definition" of the situation and seeking out approaches and solutions which move the proponent and community into sufficient over-lap in their respective ideologies. (D'Amore 1978B:2) The way in which the consultant acts and conducts research is dependent upon the stages, nature and scope of impact to be assessed, the client's definition and perception of impact, the nature of the project, and the intensity of concerns held by the potential impactees. (Di Santo 1979:9-10)

Consultants are often viewed as "hired guns" by the community, because they are assumed to adhere to the same goals and values of the business world from which they come. This may be true to some extent. However, it should be pointed out that consultants receive their terms of reference from the proponent, hence they can only perform the SIA to the extent the proponent dictates is necessary. For instance, the proponent, for reasons of maintaining secrecy and a competitive edge, may preclude any community contact by the consultant and restrict research to use of secondary data. However, one should keep in mind that the adequacy of the SIA is subject to review by government and by the community, and that the onus lies with the community to articulate its concerns.

2.3.5 The Public

This segment of the population serves to bring issues to the fore and politicize those which had been previously submerged as problems or ignored as trivial. This is the type of information that generally comes out of public meetings or hearings. Public meetings and hearings are of great utility to SIA. They serve as a forum to inform the public about projects and their implications, to assemble information which is local in nature or not included in regular sources of data, and to solicit public opinion and perceptions with regard to alternative proposals. (Carter 1980) Public gatherings are also advantageous to the proponent. They serve to anticipate and diffuse any opposition to the project by convincing the public that legitimate concerns will be considered and to emphasize benefits that will accrue to the area. In this way a base of support can be built. (Strong-Hall 1977A-25)

3. LEGAL FRAMEWORK

One aspect of resource development is that it brings together a number of actors, each with its own set of objectives and values to negotiate the development of that resource. To briefly reiterate, the proponent's objective is the production of resources at least cost; the community is concerned with the maintenance of services and well-being; and the government(s) is interested in implementing various economic and social development policies along with ensuring that the development proceeds in an orderly and equitable manner.

This section more fully sketches the activities of government — federal, provincial and territorial -- with respect to the various formal implementations concerning environmental and social impact assessment.

In all jurisdictions, SIA is regarded as a component of the environmental impact assessment (EIA) process. The human element is considered in terms of any environmentally related social consequences of a project. The need for SIA within this context most often occurs when a policy, decision or action is taken external to the community. Under federal or provincial jurisdiction, the process to be outlined below automatically applies when a project is first conceived. The purpose of the process is to ensure that the environmental and social effects of programs and/or activities are assessed while still in the planning stages. The process is thus viewed as a method for determining potential environmental and social impact. Through the operational process, as outlined in section 4, potential impacts are identified, feasible project alternatives are examined with a view to arriving at solutions which will minimize potential adverse effects, and for those impacts that remain, further mitigative and/or compensatory measures are worked out between proponent, community and government. Before looking at the individual operational phases of SIA, this section serves to locate SIA within the larger legislative or policy context of federal and provincial jurisdiction.

3.1 Federal

The Federal Environmental Assessment and Review Process (EARP) was established by Cabinet in December 1973 and amended in February 1977. It applies to projects initiated by the federal government, those for which federal funds are solicited, and those involving federal property. The ultimate responsibility for decisions rests with the Minister of Environment and his Cabinet colleagues. The Federal Environmental Assessment Review Office (FEARO) is responsible for and administers EARP. It establishes panels to review projects referred to it and provides a secretariat for support. This office also evaluates the process of implementation and makes recommendations to improve the effectiveness of the process. The individual Environmental Assessment Panels, once established, operate independently in their reviews and report directly to the Minister.

As of June 1980, approximately 30 projects are or have been subject to EARP. (Government of Canada 1980A)

3.2 Provincial and Territorial

The Task Force for the Canadian Council of Environment and Resource Ministers (CCREM) for their 1979 meeting prepared a discussion document on the EIA process in Canada. The report included a number of observations. Three main findings are of concern here. For the most part, Canadian governments have adopted a broad definition of environmental matters in their statutes, regulations and policy guidelines, such as "...the conservation and management of natural resources, the prevention and control of pollution, and the effects of development on people, their communities and the economic factors which characterize their way of life." (Government of Canada 1978A:7) Secondly, the Canadian process has been designed in each jurisdiction to be comprehensive, to facilitiate the early identification and resolution of potentially significant adverse effects of proposed development, and to take into account factors often ignored in traditional project evaluation as characterized by their monetary nature. (IBID:4) Lastly, the Task Force was unable to identify any common approach amongst the jurisdictions, because:

> each government has developed unique EIA processes and procedures to reflect its needs and circumstances. These ... vary so much throughout the country that the development of a common approach to EIA processes in Canada is neither desirable nor possible.
>
> (Ibid:5)

Very briefly, the following outlines the situation in the provinces and territories. The reader is directed to consult the officials listed in Appendix 2 for precise and current information pertaining to their jurisdiction.

- Newfoundland's bill to establish the "Environmental Assessment Act" was presented to the legislature in February 1980 and is to be administered by the Department of Consumer and Municipal

Affairs. Environment has been defined to include "physical, biological socio-economic and other components." (Virginia Lipinski, Alberta Environment, personal communication)

- New Brunswick adopted a policy proposing a provincial approach to impact studies in 1975. The Department of Environment is charged with the responsibility of designing guidelines, holding public meetings, and designating and formally reviewing projects requiring assessment. A suggested criterion for application is that the project be deemed to have "...signficant social or economic effects on a community or region." (Government of N.B. 1975:3)

- Nova Scotia's Environmental Protection Act of 1973 (amended 1975) provides the legislative authority for the Minister of the Environment to request EIA. Social and community concerns are defined as components of the physical environment.

- Quebec's Environmental Quality Act is administered by the Environmental Protection Service of Quebec. The assessment of social and cultural implications of projects is done within an environmental context.

- Ontario's Environmental Assessment Act, applying to public bodies, become law in 1976 and was amended a year later to include the private sector. Environment is defined in the Act to include:

> social, economic and cultural conditions that influence the life of man or a community...and...any building, structure, machine or devise made by man." (Government of Ontario - Ministry of the Environment 1980:8)

As of August 1980, 58 EIA's have been formally submitted. Some 20 of these involve natural resources, specifically water or water-related projects.

Manitoba's environmental assessment and review process currently operates under the auspices of government policy. Social and community concerns are outlined in the Land Use Planning Act. (V. Lipinski, personal communication)

Saskatchewan assented to Bill 107, The Environmental Assessment Act, early in 1980. A definition of "environment" includes:

> plant and animal life, including man, and the social, economic and cultural conditions that influence the life of man

> on a community in so far as they are related to matters described in...
>
> (Government of Saskatchewan, 1980:2)

- Alberta's Land Surface Conservation and Reclamation Act of 1973 contains the legislative authority governing the preparation and submission of EIA, allowing the Minister of Environment, at his discretion, to call for assessments. Guidelines were promulgated in February 1977. Here, community is viewed as an environmental category and includes a number of parameters which describe the human environment. (Government of Alberta 1977:5)

- British Columbia's Environment and Land Use Act of 1971 established the Environment and Land Use Committee (ELUC) and endowed it with "...broad powers respecting the conservation and maintenance of the Environment." (Government of B.C. 1976:25) This includes:

> all external conditions or influences under which man, animals and plants live or are developed...and this includes socio-econoic consequences of development."
>
> (Government of B.C. 1977:32)

- Northwest Territories and Yukon are provided for under EARP. The NWT is presently formulating its own socio-economic review process, and responsibility will probably lie with the Department of Economic Development. (Dan Billing, Environmental Services Division, GNWT, personal communication) The Yukon does have jurisdiction over social and economic programs, but there is no legislation requiring the submission of an impact statement or an official review program. However, the territorial government is currently preparing draft guidelines to cover the preparation and review of EIA and SIA policy and procedure. (William Oppen, Pipeline Branch, Yukon, personal communication)

3.3 The Legal Process

It must be emphasized again that SIA is located as a component of EIA. It may appear as a chapter of the EIA statement or as a separate study. The following process for EIA therefore applies to SIA. The reader should keep in mind that these steps are an outline only, derived from a standard EARP, and differ from jurisdiction to jurisdiction.

a. A proposal to develop a project, plan or program is formulated by the proponent.

b. Once the proposal has been formally announced and submitted to the various regulatory agencies for permission (in the form of approvals or licensing), the appropriate agency decides whether or not the proposal is to be subjected to the impact assessment process. Except where projects involve public lands, public financing or are government initiated, this decision is at the discretion of the appropriate Minister. Some of the criteria used include: consideration of the potential for adverse cumulative effects or whether it is a significant precedent-setting action. FEARO has devised a *Guide For Environmental Screening* to assist departments or agencies in this task.

Public reaction or input at this stage is a major factor in determining the significance of the proposal. The public is made aware of proposals via the media (newspapers, radio, television), information packages which are distributed, proponent-initiated meetings and/or a formal hearing which may be held. Once the proposal falls within government regulations, the EIA/SIA process beings.

c. The federal government undertakes an *Initial Environmental Evaluation* (IEE). The onus lies with the proponent or initiating department/agency to satisfy all legislative, regulatory and other requirements. This IEE generally includes: a project description, description of the present environment and resource use, delineation of potential impacts, proposed mitigation and compensation measures, and a judgement of the effects the impacts may have. The concerned department reviews the IEE. Should impacts be deemed insignificant or as mitigatible, the project may continue. On the other hand, if impact is deemed significant, the project is referred to the Minister of Environment for formal review under EARP. FEARO carries out this part of the process on behalf of the Minister.

d. The formal review under EARP involves the formation of guidelines governing the preparation of EIA/SIA. The components of the guidelines are to some extent standard, but in recognition of the unique attributes of the various types of projects, they remain a fairly flexible tool. The guidelines ensure that the EIA/SIA contains the proper information required for the Panel to review and for the public to assess and evaluate. The contents of the guidelines then form the basis of the EIA/SIA.

Once the guidelines have been set, the EIA/SIA process is implemented. For SIA this involves the following phases —

profiling, projection, assessment, evaluation, mitigation and monitoring.

e. Formal or informal public hearings may or may not be held. In the event of the former, they may be held at any point within the EIA/SIA process. Input from these hearings is incorporated into the document.

   It will be obvious in the next section that public involvement and awareness are integral parts of the process because it is from the articulation of public attitudes, fears, opinions and beliefs, that the nature of impacts becomes known.

f. Once the research is completed, the findings are subjected to assessment and evaluation. Depending upon regulatory requirements, this stage can require a formal submission to government or a formal set of public hearings. In the federal sphere, the document is submitted to the panel for review. Upon completion of deliberations, the panel prepares a report for the Minister of the Environment on the project and their recommendations. The document, or final EIA/SIA, is then released to the public. Approval constitutes "approval-in-principle" only and is based solely on the merits of the statement.

g. When the project has been approved, the proponent must then seek licensing and permit approvals from the appropriate administrator of the legal or policy tool governing a particular activity.

3.4 The Process and Native People

The major purpose of this process is to ensure that ecological, environmental and community (social and cultural) factors are introduced into government decision making, and that the public is advised of the consequences of a proposed action.

Because resource development tends to encroach on native lands, bands have a legitimate interest in how these studies are to be done. EARP and the provincial processes appear to present native peoples with real opportunities for making their voice heard in decisions that affect them. This is especially important because of the different emphasis, cultural effects or values that native people place on their environment. An SIA for native people must place proper importance on and accentuate such things as: the definition of band members' "individual" choices of lifestyle; the religious and cultural traditions unique to each band or those aspects shared by different bands; and the historical points of view which differ from other inhabitants who share the area of development. For example many bands have traditional, religious and medicinal uses for natural resources of the area — the plants, coloured earths, water and so on. Impacts on these resources are impacts on the members. In the present state-of-the-art of SIA, these are "presently unquantified environmental amenities and values." (Boggs 1978:8) Therefore, the question to be addressed by SIA is how to define such things in terms that can be understood by policy and decision-makers and simultaneously capture and maintain the "essence" of the native lifestyle and other issues that are important to native people.

The next section is an outline of the process or operational procedure for SIA and highlights a native-oriented overall approach to SIA which was developed by Frank Tester.

4. OPERATIONAL PROCEDURE

SIA is a process, and as such the exchange of information must occur within all steps. As a process, it must be adaptable to the unique conditions of different regions, communities and people. The cumulative effect is the systematic and comprehensive identification, measurement and evaluation of all significant impacts and their interrelationships. "Rather than simply conducting research to assess the social impacts, we attempt to begin a process which itself begins to alleviate them." (Boothroyd 1975 in Morris 1979:22)

4.1 A Native Approach

The phases comprising the procedure need not be altered significantly when applying SIA to native people. However, the approach taken by researchers must take into account the cultural and environmental context in which native peoples live and set SIA within this context. Such an approach was developed by the staff of the Keewatin Inuit Association and the Kananaskis Centre for Environmental Research (University of Calgary). The approach is characterized by the consensual nature of native society in which the exchange of ideas and information occurs in an unstructured manner and by the opportunities for mutual education and the sharing of knowledge. (Tester 1980)

Tester calls this approach modified delphi:

> The process provides for the presentation, verification, and/or rejection of the biases, insights, opinions and ideas presented by previous respondents and consequently builds upon a concensus as it progresses, while serving an educational function. The process facilitates the communication from individual to individual of the reservoir of expertise within...society itself. (ibid.)

The modified delphi is part and parcel of a more encompassing ethnographic method consisting largely of fieldwork and participant observation within and of the group under study. This requires the researcher to locate within the native community and thus permits him to focus on values as a means of eliciting information relevant to possible impacts upon the traditional lifestyles such as interpersonal relations, institutions and the all-encompassing living environment. In Tester's own words:

> The credit for the success of this approach belongs to the Keewatin Inuit who insisted we spend time in their homes, live with them while visiting communities, attend

> their places of worship and travel with them. We have therefore had opportunity for the mutual exchange of ideas and information. (Tester 1979:xvii)

The method requires that the researcher possess special skills in order to foster a relaxed and mutually respectful relationship between two people from different backgrounds who have never met before and to enhance community response. Aside from merely gathering information for SIA, the exchange should also provide opportunities for self-reflection and analysis which would allow native communities to conduct and re-evaluate their own assessments and situations. (Tester 1980 A)

4.1.1 Tester's Modified-Delphi Approach and Method

Tester's procedure has been presented in its entirety, with only a few minor changes to the text. In addition to this sequence, the Kananaskis research group provided information on the project to the Keewatin Inuit via brochures, round-table discussions and "phone-in" radio talk programs. In this way, the people became aware of the issues and were able to participate more freely and fully; this, in turn, enhanced the feedback link. (Tester 1980)

Stages in the Process of Conducting Individual Discussions with Native People

STAGE	ACTION	CONTENT
(1) Introduction	Explain	- who are you? what are you doing? who are you working with? why? - provide information about the sponsor, the proposal and yourself.
(2) Goals and objectives	Explain	- objectives are to inform natives about various aspects of development; to answer questions; to listen to ideas, concerns, feelings. - ensure that respondent feels free to ask questions at any time and ask if respondent wishes to speak at that time.

(3) Establish respondents' Knowledge and relevant experience	Question	- has the respondent seen the films? has the respondent heard of the study? does the respondent know anything about the Company and the project?
(4) Offer information	Question Listen	- give respondent a choice. If respondent wants more information, a brief factual description of the proposed project should be presented. If not, respondent may proceed on the basis of existing knowledge and information.
(5) Response	Listen Record	- respondent speaks freely and asks questions or requests information as he pleases.
(6) General questions	Question Listen Record	- questions should be sensitive to the background and knowledge of the individual; questions are asked only if information was not forthcoming (5). - questions relate to: (a) hunting, trapping, fishing (b) change, values, traditional/contemporary activities (c) social issues and concerns (d) environmental issues and concerns (e) "economic" issues and concerns.
(7) Specific questions	Question Listen Record	- variable depending on location and unique features of the community; questions are asked only if information is not forthcoming (5).

		- listen intently for expression of attitudes, values, feelings, and share your insights.
(8) Specific questions related to the project	Question Listen	- variable, but related to the respondent and his concerns questions are asked only if information was not forthcoming (5) (if the respondent is an elderly Inuk who knows the land extensively, respond accordingly). - listen intently for expression of attitudes, values, feelings and share your insights.
(9) Photos	Explain Photograph	- ask permission to take pictures and explain the purpose.

(Tester 1980)

This approach should pervade the SIA through all phases. The remainder of this section is organized to represent all phases and the many activities, methods and techniques of each phase.

A tentative socio-economic impact model for northern development which could be utilized in conjunction with Tester's approach has been developed by Blishen et al (1979). The model is intended to "assist planners and policy makers to understand and be sensitive to the multiplicity of factors which underly the socio-economic process in communities." (Blishen 1979:i Vol. 1)

Basically, this model attempts to define community social systems in terms of the interrelation between three subsystems: the social, economic and political. These three entities receive various labels by the authors, such as concepts, variables, and critical categories. These entities are in the end termed social utility, economic viability and political efficacy. In the process of model building and subsequent listing, the researchers develop a methodology whereby values are assigned which are then used to predict community responses to a variety of possible resource

> developments. To the degree that indigenous values remain the same over time, the resulting prediction can be used to develop mitigative strategies to deal with unavoidable (and largely externally determined) impacts.
>
> The authors note that validity of the model remains subject to test. However it is a step in the right direction. It has been abstracted from the context of northern community and focuses upon existing and locally unique social, economic and political institutional parameters, not indicators abstracted from an urban-industrial context, and it does not assume that all communities are alike. (1979:1)

In short, it appears to be a complex task to attempt to delineate the relationships between impact and the ability of the community to adapt to various impacts.

4.2 General

Much of the information that is required for SIA in general, and for profiling in particular, is not published and may not even be recorded. Hence, it becomes necessary to employ a multi-method approach to extract as much information as possible from the potential impactees. The most common of these are listed here:

1. Public surveys can be administered to preselected respondents to discover attitudes and perceptions, activities engaged in, where and how activities take place, and how people feel about specific places and conditions.

   There are a number of sampling methods that can be used to derive a representative sample of the population: random, stratified, clustered, probability or non-probability, or Gold's Theoretical Sampling procedure. (See Gold 1977)

   Respondents identified can be given a questionnaire by mail, telephone or personal interviews. The interview can be structured, open-ended or some combination of the two.

2. Another type of interview is the key informant. As the title suggests, "key" people in the community are selected by the researcher — e.g. the mayor, local businessmen, chief of police or locals — and are asked to identify people they feel represent the community. This latter method is useful, because often the power structure within a community is hidden. As SIA focuses directly on real and potential change in people's lives, it is crucial that assessor have fieldwork experience in first-hand interaction with the target population.

3. Secondary source analysis of, for example, census information and other similar types of records yield factual, and generally readily quantifiable, data on demography and vital statistics.

4. Observation (participant, non-participant) gives information such as location and frequency of activity. Through observation, one can get at those not usually represented in a survey, such as children or adolescents.

5. Diaries are used by selected respondents, to detail data on their day-to-day activities and frequency of activity.

6. Simulation is a method by which graphic displays are developed to simulate potential physical changes. Respondents then identify their preferences.

7. Community liaison is facilitated by public meetings, round-table discussions, open house and the more formal hearings. Amongst the many functions this method fills, it can advise and inform the community and seek advice and information from the community. People give information and judgements on how they and their institutions are likely to be affected and what they think can be done about it. The perceptions, attitudes and values that come out of public consultation are an essential ingredient for evaluating the essentially unquantifiable impacts of development.

Each of the above techniques seeks to generate data to enable formulation of "quality-of-life indicators." (D'Amore & Rittenberg 1978:12) Quality-of-life dimensions typically include:

- Personal well-being (e.g., privacy, satisfaction with living area)
- Population characteristics (e.g., ethnic composition)
- Socio-economic aspects (e.g., standard of living, unemployment)
- Community character (e.g., cohesion, social problems)
- Community services (e.g., justice, social, opportunities)
- Community organization (e.g., local newspapers, interest groups)
- Political organization (e.g., participation, government responsiveness)

(Ibid., Strong-Hall, 1977:A18-25)

Much of this type of data can be characterized as "soft" and is sometimes difficult to assess in terms of evaluability. However, a number of methods have been developed to alleviate this problem -- for example, developing social indicators (e.g., Blishen 1979, Wood 1973), transferring the data to computerized data banks (Aidala 1977:161-171, Wallach 1977:172-181), application of social network analysis (Michaelson 1976) and judgement.

4.3 Phases and Steps

This section describes the format and content of SIA. The information presented here has been derived from a number of sources, thus the experience of a variety of authors is represented. The procedure is composed of nine basic phases and in each phase appropriate methodologies and techniques have been delineated. While these phases have more or less come to be regarded as "standard" procedure for SIA, they are not ideal. A typical SIA must include the profiling, projection, assessment and evaluation phases. The methodologies and techniques presented are to be utilized in accordance with the approach one choses to adopt. The selection and their combination are dependent upon a number of factors, including: the problem one is addressing; the nature and scope of the development; the perceived agent of disruption at hand; the potential impactees; the terms of reference as laid down by the sponsor; and time, funding and expertise of researchers.

4.3.1 Scoping or Pre-Assessment (Needs Assessment)

D'Amore and Rittenberg write that the need for social impact assessment arises when a "policy, decision or action has been taken external to the community context." (1978:26)

The SIA process usually begins as a response to either of two factors: a proposal made by the proponent to commence development of a project plan or program (for instance the proponent has in mind his preferences as to sites or alternatives and some corporate objective he is attempting to fulfill) (Morris 1979:30) or, upon public announcement of the proposal, the appropriate government advises whether or not he must comply with the impact assessment process.

The requirement of an SIA, in most Canadian jursidictions, is located in government law or policy (as a component of the larger EIA). Hence the onus lies with the proponent of the development to conduct the SIA. The proponent, armed with the formulated (government) guidelines, and the research staff chosen to conduct the SIA set the scope (breadth and depth) of the study according to the relevant issues and anticipated problems, establish time horizons, and develop project "ground rules." The actors also look at the original conception of the need for or value of the facility.

Public meetings or hearings may be required or initiated as a means of bringing issues to the fore. (SIA Newsletter No. 49/50, 1980:13, OECD 1973; 119, and Boothroyd 1975:28)

Prior to undertaking SIA, three questions should be answered:

- Is the proposed development significant enough to merit detailed evaluation?
- Who would be impacted?
- What is the boundary of the study area?

(Christensen 1976:xii)

4.3.2 Problem Identification or Design Phase

This phase involves four main steps:

1. Detail the nature and scope of the activities of the development project in order to define a set of reasonable alternatives as to siting or size of project components. This aspect is best performed by in-house technicians.

2. Identify the potential impacted populations. This is generally on the basis of proximity to development.

3. Initiate the community liaison process and undertake a preliminary examination of project plans in order to identify impact causes.

4. Develop a theoretical guideline for the research process which includes the initial substantive research categories, methods and measurement criteria. This step could be viewed as a part of the profile; however, the purpose here is to give the researcher some sense of direction and focus for the next phases of work and the research design.

The "output" of this phase consists of: an explanation of possible alternatives and their activities; community-generated identification of specific areas of concern; and, as derived from the latter, the selection of substantive research categories and appropriate methods and techniques.

A research design will typically include:

- selection of evaluation criteria
- conceptual framework - to guide the analysis
- measures for the variables
- sources of data and methods for extracting them
- type of information sought
- analytical techniques to be employed
- organizations and selection of research team
- time period

- outline of the parameters of the study: type of development, number of topics to be covered, number and type of social groups to be affected, and type and levels of potential impact. (Finsterbusch 1977A:5, OECD 1975:9)

In developing a research design, the first question an analyst must ask is "What constitutes the realm of Social Impacts?" (Schott 1977:208) There is no straight-forward answer. One can only draw parameters, cite examples from past case studies, ask those who may be impacted, and rely on one's own judgement and intuition.

The SIA should contain:

- complete profile of the area
- summary of impacts -- primary and secondary, long and short term
- analysis of implications of these impacts in terms comprehensible to the decision maker
- analysis of options available for avoiding negative impacts, to enable decisions concerning trade-offs
- suggestions for mitigation of unavoidable adverse impacts which may occur (Michaelson 1976:10)

4.3.3 Profile Phase

Profiling can best be described as the development of complete baseline data which provides a basis for orientation, projection and planning. It is a process of describing and presenting the initial or original conditions of an impact situation. Profiling is comprised of baseline data of the impact area or community and constitutes a before measure of the social conditions and quality of life from which the magnitude and intensity of changes (both induced and incidental) can then be estimated. (Finsterbush & Wolf 1977:153) Baseline data includes identification of the nature and relationships between institutions, organizations and individuals, and the values, goals, perceptions, attitudes and concerns of the community. Another goal of this phase is to establish the lines of community liaison and provide for the incorporation of feedback information.

To develop the profile, the following nine elements refer to the type of information which can be collected and the methods which could be employed to gather the data. The most common methods (used in combination) are: participant observation and ethnographic research; surveys employing standard statistical sampling techniques and/or a number of interviewing techniques (e.g. key informant); discussions with community people such as elected officials, "old timers" and employees of social service or government agencies; and secondary literature research. The guiding principle for selecting information for inclusion is to ask yourself "Could this aspect of social life be affected by the proposed development?"

1. Define Impact Area Boundaries

   Boundaries can be established solely on the basis of project; this has the advantage of aiding in determining what the presumed causative factors will be — hence, predictable impacts (Wolf 1974:22). Area-related boundaries tend to be less specified, but are more open to consideration of a wider range of social conditions and planning possibilities. (ibid) Most analysts tend towards a combination of the two considerations — the area surrounding the project. Thus, one must select the largest unit of analysis which is the geographic and political unit from which most data can be gleaned (Burdge &Johnson 1977:253) and within this area, analysis moves to the community level.

   Methods:

   - key informant interview
   - mapping of historical factors
   - analyze physical characteristics
   - analyze discontinuities in socio-economic characteristics on the assumption that common characteristics imply shared values and interaction, via surveys or census data
   - let the population decide, via cognitive mapping
   - observation of interactions.

2. Site reconnaissance enables description of how the community uses various areas that may be impacted.

   The purpose is to describe the physical layout and condition of the community to provide information on "who uses what, where and when."

   Methods:

   - observation
   - key informant interview
   - diary.

3. Opinions and Perceptions of the members of the community about potential benefits and hazards of the proposed development.

   Methods:

   - interview community leaders by way of open-ended, structured or unstructured interview schedules
   - content analysis of information of media reports such as letters to the editor.

4. Background of Community Evolution and Life provides information on the historical development of the community and way-of-life of the members which could be changed in light of development.

   Methods:

   - examine secondary source historical evidence
   - newspaper content analysis
   - interview long-time residents
   - compose geneologies or kinship diagrams and life histories of selected long-time residents

5. Vital Statistics are gathered on the population in order to identify trends in population growth and composition.

   Methods:

   - examine demographic data, sources include:
     - census (on census unit or other basis)
     - provincial records (e.g., on marriage, school attendance, resource or mineral removal permits)
     - records and reports (e.g., median family income)
     - local records (e.g., deed transfers, relief payments)
     - provincial and federal agency reports (e.g., health and welfare)
     - archival information (e.g., newspapers, land use patterns, planning documents)
     - personal interview data (e.g., previous occupations and geographic mobility).

This list moves from data that is highly aggregated and measurable to information about behaviour and attitudes, which is, for the most part, less readily measurable. (Burdge and Johnson 1977 256-260) (NOTE: This type of data can be used in other steps to provide other types of information.)

6. Description of the Economic Life of the Area yields "real-life" socio-economic characteristics to supplement secondary information.

   Methods:

   - examine secondary sources of data such as land and tax records
   - observation.

7. Ascertain Current Community Standards for Land Use

   Methods:

   - examine zoning board records and rulings, maps
   - interview and/or questionnaire.

8. Ascertain Community Awareness or Involvement to key in on the extent of political organization.

   Methods:

   - observation
   - interview
   - attend council or board meetings.

9. Assess Community Values, Social Life

   The purpose of this exercise is to acquire a description of civic and social life, to gauge the extent of community social life, characteristics and organization, discover the "power structure." One may find that local organizations may have already compiled their own profiles of aspects of community life.

   Methods:

   - attend public meetings or peruse minutes of meetings
   - observation
   - interview members of organizations such as social service agencies, voluntary organizations, community services (e.g., church, schools, hospitals), local businesses.

10. Identification and Selection of Impacts

Impacts can be identified through a number of technical means such as laundry or checklists, matrices, flow diagrams, relevance trees, literature surveys, delphi interviewing, interactive interviewing, contextual analysis, contingency trees, model construction. (Finsterbusch 1977a:5) The public is asked to rate or assess the potential impacts on the basis of how they currently view and value their community. (D'Amore and Rittenberg 1978:12, Liu 1977:182-199)

Thus identified, the more significant impacts must be selected and isolated for analysis. The following criteria can be employed: extent (number of people potentially affected) and intensity (seriousness of impact, its duration and/or irreversibility). This enables one to derive higher order impacts based on magnitude, severity or political sensitivity. (Finsterbusch 1977A:8) Impacts which may not meet the above criteria, but which the community feels strongly about, must be included for study. The impacts are then grouped into mutually exclusive categories to allow for identification of trade-offs and reported in terms of issue orientation to lend political relevance.

The relative importance of impacts can be verified by going back into the community and administering small sample surveys and informant interviews. The basic operation is to compare the situation which would result "with" and "without" development. (Finsterbusch 1977A:8) "Since impacts vary considerably in type, a variety of research tools are necessary for their estimation...the choice of research tools is dependent upon the research design selected for their particular impact situation." (ibid.)

11. Compile the Social Profile.

From information gleaned concerning the aforementioned topics, or what can now be termed "quality-of-life indicators," the researcher can now define and select the impact categories to be addressed and assign impact indicators and their measurements. (D'Amore and Rittenberg 1978:12, Liu 1977:182-199)

There is no standard format for organizing the profile. White recommends building the profile around community characteristics such as interest groups or social problems. Once identified, causal modelling and scenario construction can be employed to project potential impacts. (1977:158) However, the profile is useless unless it can be understood.

4.3.4 Projection Phase

The projection of future impact situations is, analytically, the most difficult operation in SIA. Projection is the phase which forecasts or predicts what the actual impacts are likely to be and in what form the changes are likely to occur. In this phase a range of project alternatives or scenarios are formulated, including a "no go" option. Their perceived consequences are elaborated and projected over a specific period of time. Alternatives refer to: locational or site choices, other types of projects differing in magnitude (e.g. instead of one large facility, perhaps two smaller facilities located in different areas). The "no go" alternative involves projecting trends by simply accounting for changes that would normally occur without the development.

Projections are made for each alternative, and predictions made on how social impacts will differ for each alternative. These are based on the data from the community profile and provide a factual basis for forecasts, such as:

- the impacted groups and their characteristics
- the ways in whch they are likely to be impacted
- the likelihood of these impacts occurring, their magnitude, timing and duration
- the actual source of the impact
- an estimation of how well these impacts can be controlled with known technology.

Projection is not based on hypothetical goals but on real situations. One must keep in mind that communities and the different social groups within communities differ in their capability to absorb impacts.

Projection is a necessary step for a number of reasons. In order to decide a future state of affairs for a population, policy decisions require an array of plausible and possible alternatives which outline the consequences of proposed activity. (Finsterbusch and Wolf 1977:200) It is an exercise in applied social science. If the irreversible and undesirable social effects of development can be discovered before they occur, then ways to minimize the negative results may be found. Thus prediction can allow the community to take steps to prevent, or at least reduce, deterioration in the local quality of life. Hence, the future becomes a realm of choice.

Projection is as yet more an art than a science, and so is inexact and vulnerable to error. (Hobart et al 1979:426)

> We shall never escape from the dilemma that all our knowledge is about the past and all our decisions about the future. (Vlachos 1977)

Much of the profile data is non-quantifiable, thus it is necessary to utilize projection techniques which appear to account for the descriptive statements. Miller has identified 73 candidate forecasting techniques. (1977:205) Only those techniques frequently referred to in the literature appear here.

Some authors, such as Morris, are of the opinion that we do not have the methodological tools to predict the future and argue that this task is theoretically impossible and tends to be complicated by the inherently political and ideological nature of prediction. (1979:41) Morris continues to note that one can only strive to identify current trends and suggest a range of options and plausible futures based on the findings of the profile and discussions with other actors about similar project activities and their effects. (ibid.)

For example, Miller writes that societal futures can be derived from four statements. Prediction is the simplest and least useful: "a prediction is a blithe assertion that X will exist or occur here after." (1977:202) Projection or extrapolation is an extension of past and present trends into the future on the basis of some stated assumption. Conjecture is "an if...then proposition in which the if is stated...and the then is inferred and examined on the basis of implications inherent in the if." (1977:203) Forecast involves exploring the range of possible future outcomes. (ibid.)

> A great many varied methods have been...employed in developing estimates about future states of society. None has been shown to be very powerful...most yield projections and conjectures when applied in societal estimates rather than true forecasts. (1977:204)

The techniques utilized in this phase fall into three general categories: time series and projections, models, and simulation. (White 1977)

Methods:

1. Flow charts and causal modelling

These can aid in illustrating the direction of changes and interactions of significant variables. Although there is an inherent difficulty in portraying action graphically through time, this technique models the interaction of the system by weighing the interaction of factors by time and/or probability.

2. Metaphors, Analysis and Comparisons

One must keep in mind that no two situations appear alike. The technique is to compare the present situation in the area under study to that in a similar area having undergone impact. The other area serves as a model for projection. This method is based on the notion that innovation of new technologies or situations occurs in a manner or rate of change. Analogous to similarily occuring events, this projection is facilitated by comparing present to past circumstances assessed in other areas having undergone impact.

3. Scenarios

The purpose of a scenario or a "future history" is to provide a logical sequence of events for specified time periods and for each alternative. The main pitfall is the extensive use of "soft" data.

The method involves deriving from the profile data a number of assumptions — political, social, economic, technical possibilities — and accounting for feedback effects. One then selects the source of each impact and each alternative course of action. These are systematically developed and the consequences elaborated for some future time. These are then reviewed by experts to determine the likelihood of occurrence. The confidence levels of prediction must be specified: probable, possible or plausible.

Scenario writing is akin to "telling a story" of potential courses development may take. The utility of scenarios is to alert the actors to the range of possible consequences. (Vlachos 1977: 211-223)

4. Delphi Techniques

Opinions from experts and local officials are solicited through carefully planned individual interviewing. The questions are then fed to the respondent with additional information and the feedback opinion of the earlier consensus. This consensus of opinion is the prediction of likely impact. (Fitzsimmons 1975:58)

5. Cross Impact Analysis

Inzer has developed a computer simulation model based on causal relationships. It is basically a scenario generator which provides a sequence of event occurrences that are deemed plausible given the probability distribution and cross-impact effects among events. The simulation can be stopped after each time interval and the immediate conditions evaluated. Therefore, decisions concerning changes in the implicit policies which underlie the appropriate model can be made.

Therefore each run becomes a forward-looking interaction policy analysis. Information can be added at any time. The model becomes an open-ended technique for exploratory policy analysis (1978:227-238). (See also Deluca 1977:224-234, an exploratory model also based on causal relationships and various correlational techniques.)

6. Gaming and Simulation

This technique involves much skill and expertise, time and money. Alternate futures which are likely to evolve are simulated, graphically, pictorially or verbally. Respondents are asked for their perceptions and preferences. (Ben-Dak 1977:245-262, D'Amore and Rittenberg 1978:12)

7. Contingency Trees

Graphic displays of different outcomes derived from opinion, survey results and "brain storming." As with gaming and simulation, respondents rate preferred contingencies. (Fitzsimmons 1975:58, D'Amore and Rittenberg 1978:12)

8. Public Feedback and/or Additional Surveys

   Through meetings and workshops, the researcher can check the logic and plausibility of the proposed futures.

9. Trend Extrapolation

   This method involves selecting variables believed to be instrumental or independent in causing change. A curve is plotted to represent the trend of change in our time. The external constraints on the variable are considered. For instance, this method would appear to be useful for projecting population trends, as there is a general relationship between planning and development and changes in the volume and distribution of population, and these population changes in turn impact upon the community. (Malecki, 1978: 4, MacEvoy and Dietz 1977:xv, Shields 1975:267)

10. Prediction of Community Acceptance

    Burne and Sucouv add a new dimension to projection. Rather than predicting impacts, these authors advocate an approach which identifies and evaluates communities for their acceptance of (in their example, nuclear) facilities. They have developed a predictive instrument utilizing factor and multiple regression analysis which profiles correlations of economic, socio-political, etc. descriptors of communities which have had experience with similar developments. Community attitude toward the facility is enforced from the difficulty encountered, by the proponent, in obtaining permits and licences. Thus, the community with the characteristics corresponding to that which offered the least resistance is selected by the proponent for the facility. (1977:235-243)

With this array of methods and techniques available, it would appear that the future can indeed be "seen." However, Hitchcock points out that even when prediction models are based on past project activities (a comparative approach) in conjunction with other methods, that these remain largely inaccurate. "There are too many intervening variables -- physical, political, social and cultural...to make accuracy anything more than luck." (1980)

The primary task of this phase is to provide an information base upon which well informed judgements can be made by those responsible and to enable flexibility in planning to deal with future contingencies. (Morris 1979:41)

Once the trends or tendencies within the community (in the absence of the project) have been identified, and potential effects/impacts predicted for the various activities of each alternative and for mitigative measures, the next task is to describe and assess these effects.

4.3.5 Assessment Phase

Finsterbusch and Wolf describe this phase as "Logically...solving the difference equation between profile projections 'with and without' a planned intervention." (1977:263) At this point alternative futures have been projected and are now summarized and compared. The comparison process is typically in terms of "costs" and "benefits" within a specified time frame. The term "assessment" implies a factual and objective investigation with the addition of interpretation and valuation. (Wolf 1976:6)

Assessment of impacts involves delineating impacts into primary, secondary and tertiary levels (or more, depending upon the requirements of the decision-maker), and can be done on the basis of the values placed by the community, the perceived magnitude (quantity), and importance or significance (quality). Where potentially adverse and harmful impacts have been identified, mitigative measures could also be developed at this point and, again, analysed in terms of resulting impacts. Assessment inherently involves community participation.

Techniques utilized include those which assess impacts quantitatively and those which solicit public attitudes to rate those findings. (D'Amore and Rittenberg 1978:12)

Of the former, Michaelson explains six:

- cost-benefit analysis (1976:27) which due to the difficulty of attaching monetary values to impacts is not of great utility to SIA
- timing and confidence level summaries — for each alternative, projected impacts are listed and related to their probability of occurrence (ibid.)
- Quality of life indicators (See also Blishen 1979)

- hierarchy of relative significance of impacts — impacts are ranked according to pre-selected criteria such as relative importance to community
- overlay mapping
- evaluation matrix — which ranks each factor according to its relative perceived impact on different social groups.

D'Amore and Rittenberg include forming trade-off accounts between and amongst impacts and retrospective studies of the consequences of previous developments. (1978:12)

Much more developed and more widely used are the techniques used for assessing public attitudes. The techniques are all variations of the survey tool. The purpose of these surveys is to gauge public response to potential impacts. The accompanying questionnaires are constructed to reflect differences in attitudes on the basis of social groups or demographic characteristics. (ibid.) Finsterbusch (1977:291-296) makes a case for mini-surveys of 20-80 selected respondents. James developed a strategy for using survey questionnaires to discuss public opinion and then a follow-up by proponent or government to "induce individuals to respond...in a manner that promotes the overall public interest." (1977:278) In this way, the public proposes solutions they feel would ameliorate perceived impacts. "...the people of the community must recognize the problem to the degree required to support effective implementation means." (1977:287) A final assessment technique is presented by Motz and involves a diachronic or historic analysis of newspaper contents and other archival data. The findings can also be used to test the validity of data and findings from other sources. (1977:308)

4.3.6 Evaluation Phase

Evaluation is an analytical task based on values and is inevitably subjective. (D'Amore and Rittenberg 1978:12) At this stage in SIA, questions of relative values, national and local development goals and community priorities become relevant. The issue is "who benefits, and in what proportion?" for given alternatives or projects.

Evaluative criteria are based upon the needs of the ultimate user of research findings and thus cannot be selected but can be identified. (Social Impact Assessment Newsletter No. 11/12 1976:17-18) This aspect can enter at three places in the life of a development: to determine the need for the plan — by assessing present conditions and placing a value on their desirability vis-à-vis how it affects quality-of-life; pre-implementation — to project and judge the intended consequences of the plan if implemented; and, Post hoc, when the impacts are manifest. The full range of actual effects may then be compared to projected effects and can be used to modify the original policy or development or to provide inputs into future policy. (Gregori 1977:321) (See the Nanasivik Mine Study)

It must be noted that the utility of SIA to policy and other decision-making lies in the provision of information necessary to increase social benefits and reduce social costs. SIA's essentially evaluate in terms of "someone's" definition of "good" or "bad," and are thus assumed to indicate whether impacts are positive or negative because of the way they affect the quality-of-life of people.

In this phase the role of the assessor changes. Evaluation is the bailiwick of the potential impactees and appropriate decision-makers. The assessor is charged with the responsibility of providing information about available options to enable and enhance informed decisions. Through the SIA process, he provides an objective logical framework for what is essentially subjective phenomena. The decision maker is provided with information on public attitudes or "where people stand when they make their decisions." (Finsterbusch and Wolf 1977:315)

While there are no prescribed sets of methods designed exclusively for evaluation (Michaelson 1976:31), there are a number of activities that can be performed. Techniques for this are innumerable and, according to D'Amore and Rittenberg (1978:26), limited only by imagination. Above all, public participation is required. The evaluation process involves presentation through conferences, workshops and meetings (see Hedner et al 1977:331-340) before the body of decision makers, including the community, by the research team. The criteria upon which evaluation can be based are drawn from: the formal legal guidelines, precedents, "expert" and community opinions, and community-wide standards. Participation activities should include and be tailored to the different sectors in the community — e.g., geographical segments, interest groups, groups exhibiting different social characteristics (i.e., the aged, low income groups). (ibid., Willeke 1977: 317-323)

In summary, there appear to be several steps which comprise the evaluation process.

1. Analysis of criteria judged in the context of national, regional and local goals for quality-of-life and social well-being.
2. Examination of each alternative plan in light of priorities and goals.
3. Analysis of equitable distribution of costs and benefits of each project.
4. Analysis of possible trade-offs of relative costs and benefits.
5. Public presentation to the public and decision-makers.
6. Selection of appropriate alternative.

The outcome of this phase is a set of intentions and recommendations to the appropriate regulatory agencies in the form of government review and public briefs.

4.3.7 Mitigation

There are impacts which are negative and which cannot be avoided. This phase includes the actors sitting down together to discuss means of compensating those who must bear them. There are no prescribed mitigative measures. (D'Amore and Rittenberg 1978:26) Indeed, there is very little attention paid to this phase in the literature. However, recommendations and measures regarding mitigation should emanate from the preceding phases. (see Boothroyd 1980:25-26)

4.3.8 Monitoring

This phase is sometimes a study unto its own. If viewed as part of the SIA process, the actors jointly decide upon a technique for monitoring continued impacts and for re-evaluation of plans — via periodic studies, surveys and public committees. This phase can be regarded as the "feedback" mechanism in that an ongoing examination of the change process provides a better framework for prediction of future impact studies, therefore leading to more accurate assessments.

> An Ontario Hydro document points out that monitoring, as a system, is in its infancy. (Proctor and Redfern 1979:1.2). (Also see Strong-Hall 1977:2-2).

In short, this paper has not discussed the types of impacts that could result from development, nor the ways in which they could be alleviated. Rather the value of the preceding body of information on the operational process of SIA lies in its application as a tool that when utilized within (and a part of) the context of the community's own cultural traditions could result in a definition of the unique nature and scope of community-oriented impacts. Thus, the impact situation is defined in terms of the local population themselves and the solutions provided by mitigatory or compensatory measures can then be established with respect to these people in a way that will support their own particular goals and objectives.

5. CONCLUSIONS AND RECOMMENDATIONS

Although this report does not specifically address the interface between native people, resource development, impacts and their assessment, it can be assumed that Indian and Northern Affairs Canada will be asked in the future to direct some attention to this interrelationship. This is due to the accelerating development of natural resources and the tendency for resources to be located near or in communities where native people live.

As native lifestyles tend, especially in certain geographic areas, to be quite different from those of other populations, standard socio-economic impact models either do not or only partially apply. It is therefore suggested that the department undertake further research to develop approaches and research tools appropriate for and adaptable to unique native circumstances and native communities. This could be in terms of understanding both impact and the process of change in an effort to recognize what is going to happen. It is important to involve native peoples themselves because they are ultimately responsible for the community and only the community members can articulate their interests from their own viewpoint and thus ensure that the very particular and unique issues are in turn expressed in the final assessment leading to evaluation and decision.

In conjunction with the various research problems, the vast majority of the literature does not specifically address native peoples. However, there are a number of leading Canadian practitioners who have experience in the application of research tools in the specific context of native communities. As a means of continual SIA review in theory and application, this practical experience could be drawn upon by the Research Branch.

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APPENDIX 1

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ABC Political Science

Abstracts in Anthropology

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APPENDIX 2

CANADIANS INVOLVED IN SOCIAL IMPACT ASSESSMENT

The list of academics, individuals, firms, industry and government officials was compiled from a number of sources: SIA newsletter, participants and delegates at the Seminar on Social Dimensions of Enviornmental Planning (November 1978 and February 1979 - Banff Centre, Alberta) and the First National Conference on SIA (November 1978, Banff Centre, Alberta); Armour's Bibliography on Environmental Assessment (1979), reports consulted for this paper and "word of mouth."

A complete mailing list of SIA subscribers, Americans and Canadians (1500 plus), is available upon request, at cost, on mailing labels or print out by writing to the publisher of the Social Impact Assessment Newsletter, C.P. Wolf (or phone [212]-996-2708) at the address provided.

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APPENDIX 3

QUESTIONNAIRE RESPONSES

This list of projects and reports has been comprised from the responses to the questionnaires mailed to the 130-odd individuals and firms practising SIA and can be taken as fairly representative of the nature and scope of SIA occurring in Canada. However, as the majority of work appears to be recent, it cannot be regarded as inclusive. Queries concerning availability are to be directed to the responsible firm. In some cases, the sponsor has been included in brackets.

A.J. DIAMOND PLANNERS LIMITED	City of London - Environmental Impact Assessment of Proposed Transformer Station (for Ontario Hydro - Community Relations Department)
ANDRE MARSIAN & ASSOCIES INC.	Avant-Projet NBR - dossier Socio-économique (for Société d'Energie de la Baie James)
ARESCO LTD.	a Poplar River Thermal Study: Socio-Economic Impact Assessment b Rockglen Coal Property: Socio-Economic Inventory and Impact Assessment c Fife Lake Coal Property: d Heavy Oil Socio-Economic Overview (a-c -- Saskatchewan Power Corporation)
ASPECT CONSULTANTS	- A Review Assessment of Socio-economic Impacts of a Proposed B.C. Port Expansion - A Social Benefit Evaluation of an Oyster-farming Project on the West Coast of B.C. - A Preliminary Feasibility Study for an Intensive Forest Management Program in B.C. Interior - Phase 1 - Preparation of University Instruction Resource Material Focussing on Social Problems in Rural Environments

- A Study of the Life History of Cutthroat Trout in Three Sections of the Lower Fraser River Watershed and Identification of Enhancement Opportunities

- Short-term Workshops, Research, and Advisory Contracts in Resource Use and Economic Development

- Resource Inventories and Land Use Planning for a North Coast Indian Tribe

- A Response to the Proposed Provincial Wildlife Management Plan for B.C. (1979) Prepared for Two B.C. Citizens Groups

- A Study of Environmental Implications of Uranium Derived Radionuclides in Biological Systems for Presentation to the Royal Commission on Uranium Mining in B.C.

- An Arctic on B.C. Resource Economics for a University Text Book on Social Work

Ongoing Projects 1980-81 Include:

- Impact Assessment and Economic Development Feasibility Studies Related to a Proposed Heritage Trail Development in Central B.C.

- Land Use Capability and Project Feasibility Study for Several Lower Mainland Indian Bands

- Integrated Resource Management and Intensive Forestry Feasibility Study in B.C.'s Interior - Phase II

CANADIAN RESOURCECON LTD.

- Resource Evaluation and Impacts on Recreation, Kemano Completion Hydroelectric Development, Environmental Impact Study (Alcan Smelters and Chemicals Ltd.)
- Revelstoke Project: Socio-Economic and Land Use Impacts (1976) (British Columbia Hydro and Power Authority)
- Economic and Resource Management Aspects of the Commercial Use of Fish and Wildlife Resources in British Columbia (1979) (Fish and Wildlife Branch British Columbia Ministry of the Environment)
- Socio-Economic and Community Impact Assessment of the Proposed Carbon Creek Coal Development (1976) (Utah Mines Limited)
- Resource Evaluation and Socio-Economic Impact Assessment of the Proposed McGregor River Diversion Project (1976-1978) (British Columbia Hydro and Power Authority)
- Socio-Economic Impact Assessment and Resource Evaluation of the Proposed Site C Hydroelectric Project (1977-1978) (British Columbia Hydro and Power Authority)
- Economic Impact Assessment: It's Application to Dam and Impoundment Projects in Canada (1978) (Department of Fisheries and Environment, Lands Directorate)

- Environmental Impact Assessment of Proposed Improvements to the Trans-Canada Highway (1978)
  (Public Works of Canada)

- Site C Project: Tourist Industry Study (1979
  (British Columbia Hydro and Power Authority)

- Decision Making in the North: Oil Sands Case Study (1974)
  (Science Council of Canada, Committee on Northern Development)

- Environmental Assessment of Alternatives: Prince Rupert Bulk Loading Facilities (1974)
  (Federal-Provincial Joint Committee on Tsimpsean Peninsula Port Development)

- Kitwanaga-Meziadin Highway Study (1975)
  (British Columbia Department of Highways)

- An Assessment of Socio-Economic Impacts of Hydroelectric Developments at Peace River Sites C and E (1975)
  (British Columbia Hydro and Power Authority)

- Revelstoke Project: Socio-Economic and Land Use Impacts (1976)
  (British Colubmia Hydro and Power Authority)

- Socio-Economic and Community Impact Assessment of the Proposed Carbon Creek Coal Development (1976)
  (Utah Mines Limited)

- Resource Evaluation and Socio-Economic Impact Assessment

of the Proposed McGregor River Diversion Project (1976-1978)
(British Columbia Hydro and Power Authority)

- Port Alberni Glove Manufacturing Plant Feasibility Study (1977)
  (Department of Manpower and Immigration)
- Economic Impact Assessment: Its Application to Dam and Impoundment Projects in Canada (1978)
  (Department of Fisheries and Environment, Lands Directorate)
- Vancouver Island Natural Gas Pipeline Feasibility Study (1978)
  (British Columbia Energy Commission)
- The Benefits and Costs Associated With Exports and Natural Gas From Western Canada (1978)
  (Independent Petroleum Association of Canada)
- Economic and Resource Management Aspects of the Commercial Use of Fish and Wildlife Resources in British Columbia (1979)
  (British Columbia Ministry of the Environment, Fish and Wildlife Branch)
- Environmental Impact Assessment of Proposed Improvements to the Trans-Canada Highway (1978)
  (Public Works Canada)
- Site C Project: Tourist Industry Study (1979)
  (British Columbia Hydro and Power Authority)
- Resource Evaluation and Impacts on Recreation, Kemano Completion Hydroelectric Development, Environmental Impact Study (1979)

(Alcan Smelters and Chemicals Ltd.)

C.H. TEMPLETON AND ASSOCIATES - Initial Evaluation of the Proposed Alaska Highway Gas Pipeline - Yukon Territory

- Initial Impact Assessment - Dempster Corridor

CONNOR DEVELOPMENT SERVICES LTD - Adanac Mine Development

CURRY COOPERS & LYBRAND LTD. - did not submit acutal titles of reports, but included a list of activities with which they were associated:

- Alcoholic Beverage Manufacturers' Association
- A Manufacturer of Electronic and Radio Communications Equipment
- A Tar Sands Development Project
- Athabaska Oil Sands
- Ontario, Ministry of Industry & Tourism
- City of Barrie
- Oxford Shopping Centres
- City of Brampton
- Bruce Nuclear Generating Station
- Saskatoon Transit System
- City of Halifax
- A Consortium of Property Developers
- Town of Halton Hills
- Task Force Hydro
- A Mining Development in Alberta

	- City of Brampton
	- City of Burlington
	- Ontario Hydro
	- Mining Company in British Columbia
	- Private Housing Developer
CYRPUS ANVIL	- Grataga Lead-Zinc Project Mine Development: Baseline Social Profile and SIA
DANIEL ARBOUR & ASSOCIES INC.	- Relocation of Fort George
	- Relocation of Naskapis of Schefferville
ESSO RESOURCES CAN. LTD.	- SIA: Cold Lake Band Frog Lake Band Kehiwon Band Saddle Lake Band Hart Lake Band Beaver Lake Band Good Fish Lake Band
F.C. HAUSSMANN CONSULTING	- Social Impact Component of Glengowan Dam Environmental Impact Assessment
FOOTHILLS PIPE LINES (YUKON) LTD.	- Alaska Highway Gas Pipeline Project
GOVERNMENT OF CANADA, DEPARTMENT OF FISHERIES AND OCEANS (MICHAEL FRIEDLAENDER)	- Impact of Salmoid Enhancement Program on Native People
	- Native People Account Methodology
	- Social Impacts and Economic Efficiency in Resource Development Planning: The Case of Salmonid Enhancement on Canada's Pacific Coast
INSTITUTE FOR NORTHERN STUDIES (UNIVERSITY OF SASKATCHEWAN)	- Collins Bay B-Zone Development, Rabbit Lake Operation: Assessment of Northern Community Impact (not presently available to public)

(Environmental Assessment
Secretariat
Saskatchewan Department of the
Environment
Regina, Saskatchewan)

- Socio-Economic Studies Relating to the Proposed Canadian Occidental Uranium Development Near Wollaston Lake
  (Environmental Assessment
  Secretariat
  Saskatchewan Department of the
  Environment
  Regina, Saskatchewan)

- Environmental Overview for the proposed Hydro-Electric Development on the Rapid River
  (Environmental Assessment
  Secretariat
  Saskatchewan Department of the
  Environment
  Regina, Saskatchewan

- Commuting and Northern Development, Conference Proceedings
  (Extension Division
  University of Saskatchewan
  Saskatoon, Saskatchewan)

- Native Entrepreneurship in Northern Canada: An Examination of Alternative Approaches

- Socio-Economic Impact Assessment of a Proposal to Extend the Operation of the Rabbit Lake Mine-Mill by Developing a Second Ore Body.
  (Gulf Minerals Canada)

- Socio-economic Impact Assessment of a Proposed Uranium Development in the Wollaston Lake Area
  (Canadian Occidental)

- Socio-economic Impact Assessment of Proposed Hydroelectric

Developments on the Saskatchewan River
(Saskatchewan Power Corporation)

- Socio-economic Impact Assessment of a Proposed Expansion of a Potash Mine in Central Saskatchewan
(Potash Corporation of Saskatchewan)

- Land Use and Community Impact Assessment of a Proposed Hydroelectric Development on the Rapid River
(Saskatchewan power Corp)

- Case Analysis of the Rabbit Lake Fly-in Rotation System Regarding Northern Native Employment Adjustment and Community Impact
(Science Council of Canada)

- Comparison of Employment Stability and Performance Among Northern and Southern Mine and Mill Operators at Rabbit Lake
(Key Lake Mining Corp)

- Background Research Related to the Socio-economic Impact of the Proposed Uranium Development at Key Lake
(Uranerz Exploration and Mining)

- Examination of Native Entrepreneurship in Northern Canada, and of Alternative Approaches to Entrepreneurial Development
(Indian Affairs and Northern Development)

- Examination of Community Stability as an Element in Community Economic Development Among Several Communities in the DREE Western Northlands
(Canadian Council on Rural Development)

	- Examination of Food Resources Harvest in the Churchill River Study Area (Churchill Committee of the Northern Municipal Council)
INTERPROVINCIAL PIPE LINE LTD.	- Interprovincial Pipe Line (N.W.) Ltd. Norman Wells to Zama Pipeline
JAMES F. MACLAREN LTD.	- Burntwood Environmental Overview Study
KANANASKIS CENTRE (Frank Tester)	- Social Costing: A Compendium and Overview
	- Institutional Analysis and SIA (Alberta Environment)
	- Evaluation Research and Social Policy
	- Some Impacts of the Alyeska Oil Pipeline on Alaska
	- Barge vs Beach: Use of a Community Workshop Based on the "Rational Analysis" Approach to Help Resolve a Recreational/Industrial Land-Use Conflict in Hay River, N.W.T.
	- Location of Environmentally Sensitive Transportation Corridors: Case Study — The Upper Kananaskis Valley
	- Social Impact Assessment: A bibliography
	- A Social Impact Assessment of the Energy Kananaskis Project
	- Social, Economic and Environmental Impacts of the Proposed Polar Gas Pipeline
	- Social Impact Assessment: Some Directions for Alberta

	- Client Centered Community Impact Assessment
	- Investigation of the Impact of Mega-Economic Development on the Human Environment and on Regional Economies in Western Canada: Phase I
LANG ARMOUR ASSOCIATES	- The Assessment and Review of Social Impacts (Federal Environmental Assessment and Review Office)
MOBIL OIL	- Potential Impact Areas Resulting from Delineation of Development Drilling and Production of Oil and Gas on the Grand Banks
RIEBER-KREMERS & ASSOCIATES LTD.	- Environmental Impact Analysis of Proposed Water Management Plans on the Roseau River (Re: Roseau River Indian Band)
	- Peigan IR No. 147 Water and Land-Use Strategy (Peigan Indian Band)
	- Impact of the Garrison Diversion Unit on Manitoba Indian Communities (Manitoba Indian Brotherhood)
	- Impact of the Esso Cold Lake Project on the Waterhen Lake and Joseph Bighead Bands (Waterhen and Joseph Bighead Bands)
	- Assessment of Impact of the Qu'Appelle Valley Conveyance System on the Cowessess Reserve (Cowessess Indian Band)
	- Assessment of Impact of the Qu'Appelle Valley Conveyance System on Bands of the Qu'Appelle Valley (Treaty Indian Bands of the Qu'Appelle Valley (ten Reserves)

SHELL CANADA RESOURCES LTD. - Regional Socio-Economic Impact Assessment in Support of an Oil Sands Mining Project (Alsands)

WES SHERA - The Social Impact of a Juvenile Containment Centre on a B.C. Community

STRONG-HALL & ASSOCIATES LTD. - Did not include any specific projects, but the company has performed SIA, or aspects of SIA involving native people and natural resource development for:

  Gulf Canada Resources Ltd.
  Foothills Pipe Lines (Yukon) Ltd.
  Union Oil Company
  Alberta Environment
  Petro-Canada
  Syncrude-Canada
  Northwest Pipeline Corp.
  Metis Association of Alberta

WESTERN RESEARCH & DEVELOPMENT

- EIA - The Brainard Gas Plant (Chieftain)
- EIA - Ghost River Gas Plant (Phillips)
- EIA - Scotford Refinery (Shell)

APPENDIX 4

SIA: ASSOCIATIONS, EVENTS, INFORMATION SOURCES AND PUBLICATIONS

- American Anthropological Association
  1703 New Hampshire Avenue, N.W.,
  Washington, D.C. 20009

- American Association for the Advancement of Science
  1776 Massachussetts Avenue N.W.,
  Washington, D.C. 20036

- American Sociological Association
  1722 N St. N.W.,
  Washington, D.C. 20036

- Association for the Study of Man-Environment Relations
  c/o Michael Murtha,
  Project Director,
  4720 Montgomery Lane,
  Suite 907,
  Bethesda, MA 20014

- Canadian Futures: A Journal of Technological Forecasting and Applied Futures Research
  Institute for Canadian Futures,
  2323 Confederation Parkway,
  Suite 206,
  Mississauga, Ontario
  L5B 979

- Centre for Futures Research,
  University of Southern California,
  Los Angeles, CA 90007

- Committee for Anthropologists on Environmental Planning
  c/o Joe Harding,
  P.O. Box 748,
  Chapel Hill, N.C. 27514

- Community Impact Assessment Workshop report and summary are being readied for publication by Desmond Connor and Natalia Krawetz. (See Appendix 2 for addresses)

- Computer Models for Forecasting Socio-Economic Impacts of Growth and Development
  c/o Professor Merril McDonald
  Faculty of Extension,
  Corbett Hall,
  University of Alberta,
  Edmonton, Alberta
  T6G 2G4

- Cultural Survival Inc.,
  11 Divinity Avenue,
  Cambridge, MA 02138

- Environmental Assessment Notebook Series
  Superintendent of Documents
  U.S. Government Printing Office,
  Washington, D.C. 20402 ($21.00 1 set)

- Environmental Design Research Association,
  Department of Psychology,
  University of Arizona,
  Tucson, AZ 85712
  or/ C.P. Wolf

  Workshops are an ongoing process with, what appears to be, a high SIA content. For instance, EDRA 9 (7-8 April, 1978) included a workshop on "formulating guidelines for SIA".

- Environmental Impact Assessment Review
  c/o Frank Columbus
  Director of Marketing,
  Plenum Publishing Corp.,
  227 West 17th Street,
  New York, NY 10011

- EIS: Key To Environmental Impact Statements

  A monthly publication of digests and indexes of all EIS issued by the US Federal government
  Information Resources Press,
  2100 M Street N.W.,
  Suite 316 A,
  Washington, DC 20037

- Impact Assessment Association
  c/o Al Porter,
  Industrial and Systems Engineering,
  Georgia Institute of Technology,
  Atlanta, G.A. 30332

- Information Resources Press

  A complete documentation service for EIS - a computerized data base
  2100 M Street N.W.,
  Suite 316,
  Washington, DC 20037

- International Network for Social Network Analysis (Newsletter)
  c/o Barry Wellman,
  Centre for Urban and Community Studies,
  University of Toronto,
  150 George Street,
  Toronto, Ontario.

- International Society for Technology Assessment
  University of Michigan Extension Service,
  Conferences and Institutes
  412 Mayhord Street,
  Ann Arbor, Michigan 48109

- INTERAX M-29 An Interactive Environmental Simulater for Corporate Planning
  Centre for Futures Research,
  Graduate School of Business Administration,
  University of Southern California,
  Los Angeles, CA 90007

- National Association of Environmental Professionals,
  1901 North Moore,
  Arlington, Virginia 22209

  This association has devised a code of ethical practice concerning the preparation of Environmental Documents

- National Technical Information Service,
  5285 Port Royal Road,
  Springfield, VA 22161

- Navaho Community College,
  c/o Mark Schoepfle,
  Shiprock Branch,
  P.O. Box 580,
  Shiprock, N.M. 87420

  The College is conducting a research project concerning the assessment of Navaho perceptions towards energy development. Their methodology includes: an ethnographic open-ended cognitive interview approach coupled with a linear regression model. This model is designed to explicate the decision structure by which extended kin groups can attain a consensus (e.g., on types of tradeoffs and the priorities groups and individuals give to aspects of their lives).

- Rural Sociology Journal
  Department of Rural Sociology
  240 Agricultural Hall,
  University of Wisconsin,
  Madison, W.I. 53708

  August 22-25, 1980, the Society held special sessions concerning the social impacts of Natural Resource development on indigenous people.

- Science, Technology and Human Values,
  Aiken Computation Laboratory 231,
  Harvard University,
  Cambridge, MA 02138

- SIA Newsletter, published by C.P. Wolf, annual subscriptions to this monthly newsletter: Institutions $10.00, Professionals $5.00, and Students $3.00. Wolf is also involved with the S.I.A. Monograph Series. Richard Roberts, of Cornerstone Planning is presently preparing an "all Canadian Content" issue (See Appendix 2 for addresses).

- Society for Applied Anthropology
  Social Impact Assessment Committee,
  c/o Michael K. orbach,
  Centre for Coastal Marine Studies,
  University of California,
  Santa Cruz, CA 95064

  The task of the Committee is to develop application of Anthropology and other social scientific methods and skills to the field of Impact Assessment.

- Society for Applied Anthropology
  1703 New Hampshire Avenue N.W.
  Washington, D.C. 20009

- Socio-economic Assessment Guidelines for Oil and Gas Activities
  c/o Lambert Werner,
  Minerals Impact Evaluation Group,
  USDA - Forest Service, Northern Region

- Smithsonian Science Information Exchange Inc.,
  c/o m 300,
  1730 M Street,
  Washington, D.C. 20036

This organization has maintained a data base since 1949 of prepublication information about current research; the social sciences file has records for more than 8,000 projects. In the field of SIA the following research packages are available: S.I., attitudes and lifestyle changes due to natural resource development and policy, citizen participation, law and legal procedures; Energy; and, Science and Technology - e.g. technology forecasting, S.I. of Technological Development.

- Southern Rural Development Centre,
  Box 5406,
  Mississippi St. W., M.S. 39762

- Technology Forecast and Assessment Committee (IEEE Newsletter)
  c/o Joan R. Breslin,
  IEEE Headquarters,
  345 E 47th Street,
  New York, NY 10017

- U.S. National Committee for Man the Biosphere,
  c/o Eduard Wikzunski,
  Office of Environmental Affairs,
  U.S. Department of Commerce,
  Washington, D.C. 20230

APPENDIX 5

SELECTED APPLICATION OF SIA

Since its inception, SIA has been and is presently put to a variety of uses. This section illustrates the diversity of purposes in the practice of SIA.

5.1 Energy

a. Oil and Gas Activities

i) Mackenzie Valley Pipeline Inquiry

The Inquiry, headed by Justice T. Berger, was implemented by Order in Council on 21 March 1974. It was charged with the responsibility of assessing the social, economic and environmental impact of a highly complex, massive and technologically innovative project. The pipeline was proposed at a time characterized by conflict between competing interests. Concern over environmental damage was a matter of widespread interest as was the impending "energy crisis." This represented "...a situation that makes the rational, long-term planning of resource development and exploitation absolutely imperative and extraordinarily difficult." (Gambel: 1978:946)

Since 1974, the Inquiry has been regarded as "significant" for a number of reasons. For SIA, it represents an innovation in the Canadian decision-making process; the Inquiry provided a forum for the interplay of technical and environmental issues coupled with the very personalized and subjective social and cultural concerns.

The Inquiry had a broad mandate directing it to discover what could be done to protect the people, the environment and the economy of the north. It did not start out with any prescribed set of procedures, or with a preconceived notion of what would transpire. Rather, its form and content were established on the basis of testimony heard during the preliminary hearings in March and throughout the early summer of 1975. (Berger, vol. 1 1977:203) It became obvious to Berger that there were many and varied interests which must be heard if the Inquiry was to be fair and complete, because an Inquiry is "...an important means for public participation in democratic decision-making, as well as an instrument to supply informed advice to government." (Berger, vol. 1, 1977:224)

In assessing and predicting impacts, Berger gave weight to technical and environmental evidence and the "feelings" of the people that "It will destroy our way of life...soul and identify". (1977:148) In his words:

> If you are going to assess impacts properly, you have to weigh a whole series of matters, some tangible, some intangible...Indeed, when the main issue cuts across a range of questions, spanning the physical and social sciences, the only way to come to grips with it and to resolve it is by the exercise of human judgement. (1977:149)

Although the Inquiry brought social and specific northern concerns to the forefront, it is an expensive and time consuming way to do so. The final bill to the taxpayer represented an expenditure of $5.3 million. (Vol. II 1977:230) (One could also add the additional $3.5 m provided by Arctic Gas and Foothills to the Environmental Protection Board - as intervenor). (1977:224)

ii) The Alaska Highway Pipeline Inquiry

Hot on the heels of Berger, the Alaska Highway Pipeline Inquiry was established under the direction of Kenneth Lysyk. Although basically similar in nature to its predecessor, in comparison, its scope was somewhat limited. Lysyk was given a 100-day mandate to report on the anticipated social and economic aspects and the conditions under which a gas pipeline might be constructed.

As with Berger, Lysyk advocated the creation of a monitoring agency, but the latter is significant for the recommendation that a Second-stage Inquiry be established to prepare a final socio-economic impact statement upon which specific terms and conditions could be developed for construction and operation of the pipeline.

iii) Esso Resources Canada - Cold Lake Alberta

The proponent made application to the Alberta Government to build a heavy oil and upgrading facility within 3.7 miles of the Cold Lake Indian reserve. Esso and the Alberta Energy Resources Conservation Board are of the opinion that the national and regional benefits to be derived from this project outweigh any negative impacts within the project area. (Justus and Simonetta 1979:1) However, the Cold Lake Band did not hold this view and, as a means of assessing the validity of Esso's position, undertook an evaluation of the effects of a similar development (Syncor, Syncrude and Amoco oil sands plants) on similar native communities in the Athabaska Oil Sands Region (mainly Fort McMurray and Fort McKay).

The consultants, Justus-Simonetta (Development Consultants), note the lack of comparative and longitudinal studies involving native peoples and natural resource development. This is the first occasion where a native community anticipating impact has undertaken its own analysis and evaluation of impacts already incurred by other native communities. (Justus-Simonetta 1979:17) The objectives of the study were geared towards enlightening native communities on the implications of resource development and developing local strategies to more effectively deal with the situation produced by rapid development before and after implementation.

The components of the methodology are:

- detailed literature search, which included a "call for input" placed in the Social Impact Assessment Newsletter;
- Questionnaire administered by members of the Cold Lake Band to families in Fort McKay, Chipewyan and McMurray. The questions focused on perceived socio-economic and community impacts experienced by these communities;
- With the Band, the consultants reviewed the project to ensure the investigation was satisfactory;
- For the profile, baseline data was structured around a core set of socio-economic factors from which change could be measured;

- Assessment was done in terms of the evaluability of the stated objectives and goals of the Syncrude Agreement and related to the communities;
- Interviews were conducted with a variety of federal, provincial and local government, industry and social service officials and with the Indian Association of Alberta.

Two categories of impacts were derived: perceived impacts as revealed in the household questionnaires and band council interviews and impacts derived from the analysis of the records and statistics of government and private agency reports. Results of the analysis led the band to conclude "...that there have been serious disruptions in the social fabric of Indian communities in the Athabaska Oil sands Region." (1979:3)

This SIA represents an important contribution because it was initiated and conducted by the Cold Lake Band and consists of native perceptions of development and native oriented and derived migtigative and compensatory measures.

iv) Polar Gas Pipeline - Keewatin District

The Keewatin Inuit Association requested assistance from Indian and Northern Affairs Canada (INAC) to prepare an "information program concerning the possible construction of a natural gas pipeline through the Keewatin District." (Tester 1979:i) The Department provided funding and the Kananaskis Centre (University of Calgary), with Frank Tester as project leader, was retained as consultant. The study appears in two volumes. The first presents an historical overview of the area, explanation of the project and verbatum transcripts of meetings and discussions; the assessment constitutes Volume II.

Tester's interactive ethnographic approach focused on values as a way of eliciting information relevant to possible impacts upon traditional lifestyles, inter-personal relations, institutions and the living environment of the Keewatin Inuit.

> The credit for the success of this approach belongs to the Keewatin Inuit who insisted we spend time in their homes, live with them

> while visiting communities, attend their places of worship and travel with them. We have therefore had opportunity for the mutual exchange of ideas and information. (1979:xxiii)

The objectives of this project were not only to gather information from which to derive the implication of the development, but also to disseminate data to inform local residents about developments specific to their region.

The following means were employed to achieve the latter: distribution of newsletters, and "information packages" to community leaders and "community knowledgeable people"; personal indepth discussions with about 260 locals; film presentations, open community forums; and, community radio braodcasts and "phone in" programs. (1979:4) Once the communities were aware of the details of the project, the feedback from them became a valuable information input for the former goal. A modified delphi approach was employed as a means of extracting and substantiating the informaton. Given the problems related to the reliability and validity in using questionnaires across cultures this technique appears well suited for the native context. In addition, it facilitates a two-way flow of information.

> The aspect of the process was highly compatible with consensus as a major strength in Inuit Society: Information and ideas related by an individual were then used as part of a pool of information to be passed on to the next individual for verification or to be expanded and elaborated upon. (1979:56)

v) Alsands Project - Fort McMurray, Alberta

This SEIA was prepared by Hobart, Walsh and Associate Consultants Ltd. and Quest Consultants Ltd. for the Alsands Project Group in support of an oil sands mining project.

The consultants encountered difficulty and found the SIA to be conditioned by the diversity of the four communities and the "new town" and the differences in the community's vulnerability to impact and between the kinds of potential impact. They developed a four stage strategy which deviates only slightly from the "standard" (section 6). The process was followed for each of the five communities. The development was delineated in terms of time phases - preconstruction, construction and operations.

For each phase and each community, the following components were studied in terms of potential impact: population, regional and local economy, community and socio-cultural patterns, infrastructure, services and housing. In turn, each component was divided into a number of sub-components or indicators. For example community socio-cultural patterns consists of: population origins, community structures, household and family organization and stability, lifestyle expectations (recreation and leisure activities, pace of life, satisfaction with quality of life), conformity and deviation, adult crime, juvenile problems, sexual offences, alcohol and drug abuse, dependency, physical and mental health, suicide), community integration. (1979:102-149)

The importance of impacts was identified by the percentage increase in behaviour or phenomena - minor 0-15%, moderate 17-30% and major 30% plus. (1979:317) The authors note that when dealing with social impacts, it is difficult to quantify the level of expected impact with any degree of precision. Hence, their means of assessing and projecting impacts was a matter of judgement based on knowledge of the situation and the findings of other similar cases.

vi) Norman Wells NWT - Esso Resources Canada Ltd.

Esso and Interprovincial Pipeline submitted application to develop the remaining hydrocarbon reserves at Norman Wells and to transport the crude oil to Southern Canadian refineries.

The terms of reference provided to the consultant - Resource Management Consultants - instructed them to utilize "the wealth of data available..." (1980:4) from government sources and pipeline companies. The fieldwork undertaken was limited to literature review and meeting with government officials. (ibid) Hence, the profile was historical and recent background was developed from existing documents. For the most part, projections were based on analysis of past trends of change.

> In order to predict the future, one must understand the recent...past of the area, then look ahead at probable developments influenced by external factors. (1980:148)

For projection of economic growth, researchers looked at individual sectors and the past rates of change in each in terms of volume of production and value. Rates of growth were determined by the method of least squares.

In terms of social and cultural change, as a result of perceived impacts, the researchers concluded:

> Because of inherent difficulties in quantifying most change in social and cultural indicators, it is necessary to generalize...To do so would require substantially more data and a greater level of analysis then required within the terms of reference of this study. (1980:163)

b) Nuclear

The Proposed Skagit Nuclear Power Plant

This proposed plant was to be located in close proximity to three native tribes on the northwest coast of Washington State, affecting approximately 1,300 people. The tribes applied for intervenor status in 1978 because they were concered about potential impacts on the natural environment, in particular, fisheries and tribal institutions. The request was denied on the grounds of tardiness of their application.

With modest funds from the Bureau of Indian Affairs, the tribes researched the value of their fisheries, health conditions, reviewed the SIA literature as it related to minorities, rural populations and Native American tribal and band members. They also undertook preparation of an impact monitoring system to be employed should the plant be built. Robbins notes that the real value of this endeavour was the acknowledgement of native peoples as a vital interest. (1980:5-6)

c) Hydro

i) Huntly Impact Monitoring Project

The School of Social Sciences at the Univeristy of Waikato, New Zealand, in 1975 formed a research unit to monitor the social and economic consequences resulting from the construction and operation of a thermal power station at Huntly. This is a longitudinal study of social and economic systems, and the manner in which they are affected by such large developments.

This project grew, in part, as a response to the fears articulated by Maori people when the project became known. The people are concerned because they feel the power station will affect the land and the river to which they have strong psychological links. The purpose of the study is not to assess the merits of the Maori claim but to evaluate the psycho-cultural reaction to change.

> The explanation will have to draw deeply from records of Maori culture and history. This may perhaps demonstrate the inevitability of conflict over changes... It may also demonstrate the pointlessness of cost benefit analysis in a cross-cultural situation. (University of Waikato 1976:11)

(For information: Tom Fookes, Huntly Social and Economic Impact Monitoring Project, School of Social Sciences, University of Waikato, Hamilton, New Zealand.)

ii) Site Screening to Minimize Socio-Economic Impacts

Energy facilities are, by nature, large and tend to be located in natural areas comprised of small populations. Site screening is advocated as a means of preventing adverse impacts on the area which may require costly mitigation programmes or even abandonment of the project. The key is to locate facilities in areas which have the greatest capacities for absorbing negative impacts and where the locals may even benefit from the construction and operation.

Stoloff et al have developed a method to screen multi-county regions to identify areas where implementation of a coal fired or nuclear power plant would cause the least adverse socio-economic impacts.

In brief, the requirements and model are:

- identify large areas where potential sites may be located;

- determine which aspects of community life might be affected. This includes decisions regarding goals and objectives for minimizing adverse impacts and taking advantage of benefits. A working set of considerations is developed with input from a number of sources including a reconnaissance field study to further delineate which impacts should be given attention;

- determine which socio-economic measures or indicators would give the best information. A list of indicators is prepared to correspond to each socio-economic consideration and data is edited for each indicator. Some indicators could be rejected because of the lack of good and current information;

- five functional area indexes were composed from a number of corresponding indicators and their weights. The best source for weights was deemed to be the past experience and professional judgement obtained from staff planners and economists;

- scores were calculated for each county on each index. Counties were then compared on the basis of their scores as indicating their relative capacities to absorb expected impacts;

- summarizing and displaying the findings involved devising a computed-drawn base map and a computer-generated kivait diagram. This latter method allows a simultaneous display of a county's score or rank on several variables.

Four sites, including control counties, were selected on the bases of comparability of similar criteria.

Comparisons were then made on the basis of demographic baseline data such as perceptions of community change, school enrolments, and housing patterns and preferences. The model is comprised of several modules in a number of iterations. It is useful to the extent that discrepancies between projections and reality are not so great as to destroy the effectiveness of the model as a planning tool. However, the authors conclude that their approach produces accurate and reliable projects for socio-economic change occurring in definable areas such as country and school districts when comparisons are made between projections and actual base data. (Wisniewski and Thompson 1980)

5.2 Mining

i) Northern Great Plains - Coal Development

This study centres around the belief that an understanding of how socio-economic characteristics such as commuting patterns and housing preferences behave would be valuable in helping decision-makers plan for expanded coal development. The objectives of the study were to develop models to predict the local hiring rate and to predict settlement patterns of the non-local workers. The researchers have found that the most important determinant in SIA is the projection of where non-local workers will settle because the amount of new and additional services that will be required is directly related to the number of new residents settling in the community. (Wieland et al 1978:15)

ii) Nanisivik Mine - North Baffin Region - NWT

Construction of the mine began in spring 1976 and the operations phase in the fall. The terms and conditions for operation of the mine provided for a socio-economic impact study once the mine had been in operation for several years. In the spring of 1978 the Baffin Region Inuit Association (BRIA) proposed that study begin and look at two main impacts: the effectiveness of the native employment programme and the impact of mine employment on native workers and their families, particularly those living in communities closest to the site. (Arctic Bay, Pond Inlet and Igloolik) Impacts on the following aspects of native communities also received attention: traditional harvesting, consumption of store bought goods, community health, violence and crime, school retention rates and vocational aspirations among young people. (BRIA 1979:1-4)

The research design was formulated by representatives from INAC, Government of the N.W.T., Nanisivik Mines and BRIA. Charles Hobart, a sociologist with the University of Calgary, was retained as principle investigator.

Three broad goals were formulated: to identify current problems in order to propose practical solutions; to gather information useful in preventing similar problems from occuring; and to provide a basis for evaluating the sensitivity of the current monitoring process. (1979:45)

The methodology employed consisted of:

- obtaining data from: interviews with Inuit workers and family and mine personnel, mine personnel files and records, federal and territorial government files and documents on fur and game harvests, crime and morbidity conditions, etc.
- interviews were held with residents drawn from seven communities who had been employed at the mines of November 1978. Wives and children of workers were also interviewed, but with a somewhat different schedule. (1979:50)
- the interview and questionnaire process was performed by an Inuit woman who had previous interviewing experience. She was retrained by the consultant.
- a profile of the Inuit work force was drawn from the above data and conclusions drawn.

The value of this study lies in the ineffectiveness of the interview and questionnaire technique. Of the approximately 214 present and former employees questionnaires were obtained for only 85, for wives 33 and for children 26. The author attributes this low response rate to the unavailability of people (it appears they were off on hunting or trapping trips) and the perception that little would come of the study. "In many other cases workers and/or wives refused to be interviewed." (1979:52) Of the questionnaires that were completed, the author notes that some questions were not answered, while others appeared to have been completed by the interviewee. This indicated that the question was not comprehended. (1979:57) This dismal response record appears to lend support to Tester's work and validity of the ethnographic approach when applying SIA to indigenous cultures.

iii) Strip Mining in Southeastern Montana

Raymond Gold is another advocate of the ethnographic approach to SIA. His study of the social impact of coal industrialization on the area's ranchers and two principle towns reveals the validity of this method. (1974:123-146) The primary objective of his research was to find out what was happening to the social organizations, human relationships and lifestyles of these people.

Gold's study is a sensitive piece of work which brings out the values and perceptions of the people that would otherwise lay hidden and dormant. For example, an informant revealed his reverance for the land and exposed the commitment to keeping it productive for cattle raising.

> If you sell out, then what will you do? You will no longer have roots and you will do and be nothing...We'd all want to sell to another rancher if we sell, but only to another rancher... (1974:143)

Perceptions and "feelings," such as the aforementioned, when brought to light via the SIA process, enable the researcher to comprehend more fully the essence of problems and then facilitate the formulation of solutions or mitigative measures.

5.3 Flood Management

Glengowan Dam and Reservoir - S.W. Ontario

The control and impounding of water is generally viewed as beneficial to the people in the immediate area, because it protects them from the devastating consequences of flooding. However, this study appears to bring out some of the more salient issues in the notion of controlling water. One of the principle concerns for this project was the inadequate water supply levels for sewage treatment. Upon closer inspection it became obvious that there would be an unsatisfactory allocation of costs and benefits. "More exactly, the major beneficiaries would be the residents of London while the socio-ecological system within the project impact zone would bear almost all of the negative impacts." (Griffith 1978:4) The primary type of impact was seen to be displacement and relocation. This dimension is broadened when one considers the conspicuous costs of land settlement negotiations and moving expenses, and non-quantifiable phenomena such as moving anxieties and change of lifestyle. (ibid.)

This portion of the study was to identify and elucidate a number of possible social impacts. To do so required establishing impact area parameters. The researchers decided to define the zone, somewhat arbitrarily, to the area they felt would experience direct impacts. Three sources of data provided information on types of impact to be expected: sample survey and questionnaire, government sources; and Canadian Geographic Information System provided information on land capability changes.

Since this preliminary study was undertaken, the Upper Thames River Conservation Authority has modified the project and proposed several alternatives. (1979:2) This decision was based on reactions and input received from various sources. It is assumed that Griffith's delineation of potential impacts on the various communities was one of the considerations taken into account. The terms of reference for the Glengowan Dam SIA are contained in the above noted document.

5.4 Land Development

Community Well-Being

The authors of this work report that there is a strong association between one's sense of well-being and one's physical environment. (James and Brogan 1974:155) This work reports on a correlational study between urban well-being and the environment through the use of twenty-two indices (e.g., robbery arrests, burglary victims, fires, alcoholic patients, violent deaths, etc.) which portray the character, quality, spatial arrangements or some other property of the attributes selected by the community as desirable. The authors conclude that:

> ...this study has demonstrated that exterior physical factors are statistically significant and important as

> socio-economic factors in explaining such social problems as arrests, poor mental health, absence of school, fires etc...the results indicate that the physical environment is much more important than socio-economic factors in associations involving juvenile and drug problems. (1974:164)

5.5 Physical and Mental Health

i) Health Care Programs

SIA can be utilized in health care to prepare predictions of program results so that prediction and measured actual results may be compared in the future. The authors of this study suggest an Organizational Systems Perspective where SIA is considered through the following construct: ACTION + REACTION RESULT and uses an INPUT-OUTPUT format to describe proposed actions and system states. The authors suggest that data be gathered through the delphi survey. (Mitchel and Mitchel 1979:4-6)

ii) Containment Centre - A British Columbia Community

In the mid 1970's, the B.C. government contemplated developing "wilderness camps" as a more definitive and well-rounded program for juveniles. In order to assess the containment program, it was proposed that a SIA, as a component of an external evaluation, be conducted to provide planning information.

The objectives of the SIA are: to develop and test an approach to S.I. studies that has some transferability; to determine primary, secondary and tertiary impacts; and to identify community variables which should be taken into account. (Shera 1978:9) The model for the study consisted of three impact levels to be assessed via to phases of impact research assessment and monitoring. Methodology consisted of interviews and questionnaires and secondary sources. (e.g., newspapers, community meetings) The impact of the camp on the community in general can be ascertained via a form of methodological triangulation.

iii) Federal Government - Health, Safety or Fairness (HSF) Policy

Federal government policy on Socio-Economic Impact Analysis (SEIA) has been in effect since August 1978. Forumulated by Treasury Board, the policy requires that any major new regulations or amendments to existing regulations relating to health, safety or fairness (HSF) be subjected to SEIA. The policy is intended to: improve the allocation of resources and the information available to decision-making on other socio-economic factors [such as the impact on market efficiency, distribution of income, regional balance, technological progress, employment and inflation]; to ensure uniformity among regulations made in HSF area and in the methodologies and assumptions used perform such analysis; and to provide an opportunity for increased public participation. (Government of Canada 1979:3)

Health or Safety Regulations apply to the general public to particular segments or to protection of the environment. For example, regulations concerning environmental contaminants fall within the definition. TB defines SEIA as "an evaluation or an assessment of the allocative effects (i.e., effect on market efficiency) and non-allocative effects (i.e., effect on the distribution of income) of a proposed new incentive. (8:1979)

The suggested methodologies include:

- benefit/cost analysis to derive resource allocation effects; if there are political or analytical problems (for example, placing a value on the loss of life) which preclude the use of benefit/cost analysis, the cost-effectiveness methodology should be used;
- risk analysis;
- general equilibrum methodologies (macro economic models)
- input-output analysis. The document also includes the elements that should be included in the SEIA.

iv) Boomtown's Youth

William Freudenberg has been looking at the effects of rapid population growth on social and personal well-being of boomtown residents. (1980) An earlier empirical study dispelled the common prediction that:

> ...a community's younger members are likely to benefit from economic growth and the expansion of opportunities, while elderly persons are more likely to be negatively affected. (1979:1)

The data reported in the 1979 study were collected as part of a larger project involving four energy growth communities in western Colorado. To provide longitudinal data the methodology included: sixteen months of first-hand ethnographic observations, a probability sample survey of adults and seniors and sophmores in high school in the four communities; and the use of publicly available statistics.

All the survey data relationships are cross-sectional comparisons between the three communities which have not yet experienced "booms" and the one community which has.

Freudenberg's analysis was carried out through the use of well-being indicators measured through: aggregate level data giving objective measures (e.g. census type information) and individual level data giving subjective indicator perceptions - obtained through interviews on peoples' attitudes, reported and observed behaviour. (1980:8)

5.6 Social Impacts of University Research

As with the construction of dams to prevent flooding, one would assume that research of any sort can only serve to benefit society. Cesar Chavez and the United Farmworkers of America attempted to persuade the University of California to consider the impact its mechanization research is having on farmworkers. In fact, a California State Assemblyman introduced a bill that would require social and employment impact statements before public funds could be spent on research involving labour-displacing farm machinery. The bill was withdrawn in favour of appointment of a "blue-ribbon committee" to look into this situation. (Social Impact Assessment Newsletter No. 33, 1978:17)